

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: LEE, RIP A. Examiner #: 78680 Date: 10/07/02
 Art Unit: 1713 Phone Number 306-0094 Serial Number: 09/937,780
 Mail Box and Bldg/Room Location: CPB-8C32 Results Format Preferred (circle): PAPER DISK E-MAIL

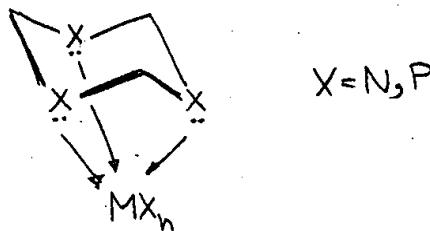
I MCAIf more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Method for polymerizing olefinsInventors (please provide full names): MIHAN, Shahram SEIFERT, fluids
KÖHN, RandolphEarliest Priority Filing Date: 05/14/99

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for metal complexes containing
 1,3,5-triazacyclohexane to 1,3,5-triphosphacyclohexane rings

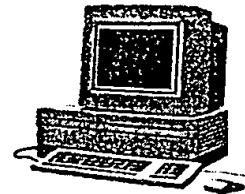
**BEST AVAILABLE COPY**M = Gp3-10, preferably Gp6X = an ligand

STAFF USE ONLY		Type of Search	Vendors and cost where applicable
Searcher: <u>EL</u>		NA Sequence (#) <u>STN</u>	<u>\$296.06</u>
Searcher Phone #:		AA Sequence (#) <u>Dialog</u>	
Searcher Location:		Structure (#) <u>(4) Subsites</u>	<u>Questel/Orbit</u>
Date Searcher Picked Up:		Bibliographic <u>(and)</u>	<u>Dr. Link</u>
Date Completed: <u>10-8-02</u>		Litigation <u>RL</u>	<u>Lexis/Nexis</u>
Searcher Prep & Review Time: <u>10</u>		Fulltext <u>WWW</u>	<u>Sequence Systems</u>
Clerical Prep Time:		Patent Family <u>WWW</u>	<u>WWW/Internet</u>
Online Time: <u>80</u>		Other <u>Other (specify)</u>	

EIC1700

Search Results

Feedback Form (Optional)



Scientific & Technical Information Center

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact *the EIC searcher* who conducted the search *or contact*:

Kathleen Fuller, Team Leader, 308-4290, CP3/4 3D62

Voluntary Results Feedback Form

➤ *I am an examiner in Workgroup:* *Example:*

➤ *Relevant prior art found, search results used as follows:*

- 102 rejection
- 103 rejection
- Cited as being of interest.
- Helped examiner better understand the invention.
- Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- Foreign Patent(s)
- Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art not found:*

- Results verified the lack of relevant prior art (helped determine patentability).
- Search results were not useful in determining patentability or understanding the invention.

Other Comments:

CLEAN VERSION OF ALL CLAIMS

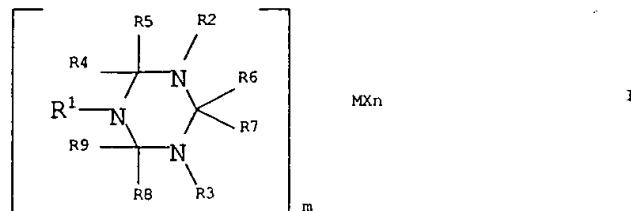
1. A process for copolymerizing ethylene or propylene together or with other olefinically unsaturated compounds, which comprises carrying out the polymerization in the presence of a catalyst system which comprises the following components:

- A) a complex of a transition metal with one or two substituted or unsubstituted 1,3,5-triazacyclohexane ligands or corresponding ligands in which one or more of the ring nitrogen atoms are replaced by phosphorus or arsenic atoms, and
- B) if desired one or more activator compounds.

2. A process for copolymerizing ethylene or propylene together or with other olefinically unsaturated compounds at temperatures from 20 to 300°C under pressures from 5 to 4000 bar, which comprises the following steps:

- a) contacting a complex of a transition metal with one or two substituted or unsubstituted 1,3,5-triazacyclohexane ligands (A) with at least one activator compound (B),
- b) contacting the reaction product from step (a) with the olefinically unsaturated compounds under polymerization conditions.

3. (amended) A process as claimed in claim 1, wherein a compound of the formula I



in which the variables have the following meanings:

M a transition metal of groups 4 to 12 of the periodic table,
R¹-R⁹ hydrogen or organosilicon or -carbon substituents with 1 to
30 C atoms, it being possible for two geminal or vicinal R¹
to R⁹ radicals also to be connected to form a five- or
six-membered ring, and it being possible, when m is 2, for
an R¹-R⁹ radical of in each case one triazacyclohexane ring
to form together with a substituent on the other
triazacyclohexane ring a bridge between the two rings,
X fluorine, chlorine, bromine, iodine, hydrogen, C₁-C₁₀-alkyl,
C₆-C₁₅-aryl or alkylaryl with 1 to 10 C atoms in the alkyl
radical and 6 to 20 C atoms in the aryl radical,
trifluoroacetate, BF₄⁻, PF₆⁻, or bulky noncoordinating
anions,
m 1 or 2,
n a number from 1 to 4 which corresponds to the oxidation

state of the transition metal M

is employed as component (A).

4. (amended) A process as claimed in claim 1, wherein M is a transition metal of group 6 of the periodic table.

5. (amended) A process as claimed in claim 1, wherein mixtures of ethylene with C_3 - C_8 - α -olefins are employed as monomers.

6. (amended) A process as claimed in claim 1, wherein an aluminoxane is employed as activator compound (B).

7. (amended) A process as claimed in claim 1, wherein a borane or borate having at least 2 substituted aryl radicals is employed as activator compound (B).

8. (amended) A process as claimed in claim 3, wherein at least one of the radicals R^1 , R^2 and R^3 is different from the other radicals in this group.

9. (amended) A catalyst for polymerizing olefins, comprising at least one transition metal complex (A) as defined in claim 1 and a support material and, if desired, one or more activator compounds (B).

10. A process for polymerizing or copolymerizing olefins wherein the polymerization or copolymerization is carried out in the presence of a catalyst as claimed in claim 9.

11. A transition metal complex of the formula I as defined in claim 3, wherein at least one of the radicals R^1 , R^2 and R^3 is

=> file reg
FILE 'REGISTRY' ENTERED AT 20:48:47 ON 08 OCT 2002
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2002 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 7 OCT 2002 HIGHEST RN 459783-15-4
DICTIONARY FILE UPDATES: 7 OCT 2002 HIGHEST RN 459783-15-4

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP
PROPERTIES for more information. See STNote 27, Searching Properties
in the CAS Registry File, for complete details:
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> d his

(FILE 'HOME' ENTERED AT 19:52:14 ON 08 OCT 2002)

FILE 'LREGISTRY' ENTERED AT 19:53:27 ON 08 OCT 2002

L1 STR
L2 STR

FILE 'REGISTRY' ENTERED AT 19:54:43 ON 08 OCT 2002

L3 0 S L1 AND L2

FILE 'LREGISTRY' ENTERED AT 19:59:35 ON 08 OCT 2002

FILE 'REGISTRY' ENTERED AT 20:04:01 ON 08 OCT 2002
L4 SCR 1988 OR 1956 OR 1964 OR 1921 OR 1931
L5 SCR 1841
L6 1 S L1 AND L4 AND L5
L7 SCR 1838
L8 5 S L1 AND L4 AND L7

FILE 'LREGISTRY' ENTERED AT 20:07:25 ON 08 OCT 2002

FILE 'REGISTRY' ENTERED AT 20:08:10 ON 08 OCT 2002
L9 1 S C6H12AUBRN3P/MF

FILE 'LREGISTRY' ENTERED AT 20:08:48 ON 08 OCT 2002
L10 STR 159283-72-4

FILE 'REGISTRY' ENTERED AT 20:10:52 ON 08 OCT 2002

L11 1 S (L1 NOT L10) AND L4 AND L7
 L12 1632 S L1 AND L4 AND L7 FUL
 SAV L12 LEE780/A
 L13 29 S (L1 NOT L10) AND L4 AND L7 SSS SAM SUB=L12

FILE 'LREGISTRY' ENTERED AT 20:17:35 ON 08 OCT 2002

L14 STR

FILE 'REGISTRY' ENTERED AT 20:20:19 ON 08 OCT 2002

L15 24 S (L1 NOT (L10 OR L14)) AND L4 AND L7 SSS SAM SUB=L12
 L16 566 S (L1 NOT (L10 OR L14)) AND L4 AND L7 SSS FUL SUB=L12
 SAV L16 LEE780A/A
 ACT OLEFINS/A

 L17 (1) SEA FILE=REGISTRY ETHYLENE/CN
 L18 (1) SEA FILE=REGISTRY POLYETHYLENE/CN
 L19 (1) SEA FILE=REGISTRY PROPYLENE/CN
 L20 (1) SEA FILE=REGISTRY POLYPROPYLENE/CN
 L21 (1) SEA FILE=REGISTRY 1-BUTENE/CN
 L22 (1) SEA FILE=REGISTRY 2-BUTENE/CN
 L23 (2) SEA FILE=REGISTRY POLYBUTENE/CN
 L24 (2) SEA FILE=REGISTRY BUTADIENE/CN
 L25 (1) SEA FILE=REGISTRY POLYBUTADIENE/CN
 L26 (1) SEA FILE=REGISTRY ISOPRENE/CN
 L27 (1) SEA FILE=REGISTRY POLYISOPRENE/CN
 L28 13 SEA FILE=REGISTRY (L17 OR L18 OR L19 OR L20 OR L21 OR L22

FILE 'LCA' ENTERED AT 20:27:33 ON 08 OCT 2002

L29 1280 S (POLYOLEFIN? OR POLYETHYLENE# OR POLYETHENE# OR PE OR P
 L30 461 S (POLY(W) (ETHYLENE# OR ETHENE# OR PROPYLENE# OR PROPENE#

FILE 'HCA' ENTERED AT 20:32:38 ON 08 OCT 2002

L31 167 S L16
 L32 625 S L12
 L33 706084 S L28 OR L29 OR L30 OR OLEFIN##
 L34 14 S L31 AND L33
 L35 28 S L32 AND L33
 L36 87291 S ACTIVAT!R?
 L37 2 S L34 AND L36
 L38 2 S L35 AND L36
 L39 2 S L37 OR L38

FILE 'REGISTRY' ENTERED AT 20:34:57 ON 08 OCT 2002

L40 215687 S (C(L)H(L)B)/ELS
 E BORANE/CN
 L41 636 S (B(L)H)/ELS (L) 2/ELC.SUB

FILE 'HCA' ENTERED AT 20:36:51 ON 08 OCT 2002

L42 156762 S L41 OR L40 OR BORANE# OR DIBORANE# OR BORATE# OR BH3 OR
 L43 5 S L34 AND L42

L44 6 S L35 AND L42
 L45 6 S L43 OR L44
 L46 24 S L31 AND L42
 L47 50 S L32 AND L42
 L48 5 S L46 AND (35 OR 36 OR 37 OR 38)/SC,SX
 L49 8 S L47 AND (35 OR 36 OR 37 OR 38)/SC,SX
 L50 8 S L48 OR L49

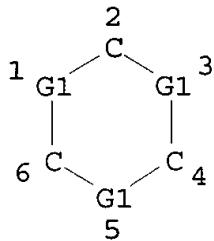
FILE 'LREGISTRY' ENTERED AT 20:41:49 ON 08 OCT 2002
 L51 STR L1

FILE 'REGISTRY' ENTERED AT 20:43:11 ON 08 OCT 2002
 L52 5 S L51 SSS SAM SUB=L12
 L53 141 S L51 SSS FUL SUB=L12
 SAV L53 LEE780B/A

FILE 'HCA' ENTERED AT 20:44:15 ON 08 OCT 2002
 L54 38 S L53
 L55 9 S L54 AND L42
 L56 5 S L55 AND (35 OR 36 OR 37 OR 38)/SC,SX
 L57 14 S L54 AND L33
 L58 9 S L39 OR L45 OR L50 OR L56
 L59 4 S L55 NOT L58
 L60 8 S L57 NOT L58
 L61 8 S (L34 OR L57) NOT L58
 L62 13 S L35 NOT (L58 OR L61)

FILE 'REGISTRY' ENTERED AT 20:48:47 ON 08 OCT 2002

=> d 153 que stat
 L1 STR

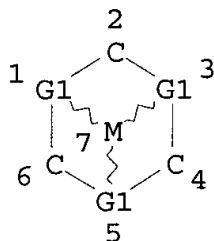


VAR G1=N/P/AS
 NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 6

STEREO ATTRIBUTES: NONE
 L4 SCR 1988 OR 1956 OR 1964 OR 1921 OR 1931

L7 SCR 1838
L12 1632 SEA FILE=REGISTRY SSS FUL L1 AND L4 AND L7
L51 STR



VAR G1=N/P/AS

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L53 141 SEA FILE=REGISTRY SUB=L12 SSS FUL L51

100.0% PROCESSED 1632 ITERATIONS

141 ANSWERS

SEARCH TIME: 00.00.01

==> file hca

FILE 'HCA' ENTERED AT 20:49:39 ON 08 OCT 2002

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

PLEASE SEE REEL CHARACTERIS FOR DETAILS.
COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 3 Oct 2002 VOL 137 ISS 15
FILE LAST UPDATED: 3 Oct 2002 (20021003/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d 158 1-9 cbib abs hitstr hitind

L58 ANSWER 1 OF 9 HCA COPYRIGHT 2002 ACS

136:402085 1,3,5-Triazacyclohexane complexes of chromium as homogeneous model for the Phillips Catalyst CrO₃/SiO₂. Koehn, Randolph D.; Smith, David; Schichtel, Bjoern; Kociok-Koehn, Gabriele; Lilge, Dieter; Mihan, Shahram; Molnar, Ferenc; Maas, Heiko (Dept. of Chemistry, Univ. of Bath, Bath, BA2 7AY, UK). Polymeric Materials Science and Engineering, 86, 313 (English) 2002. CODEN: PMSEDG. ISSN: 0743-0515. Publisher: American Chemical Society.

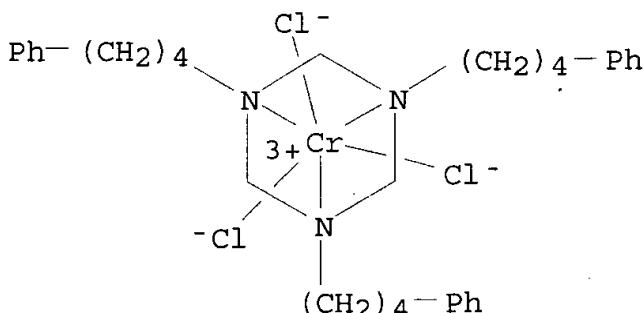
AB 1,3,5-Triazacyclohexane complexes of chromium was prep'd. by one-pot synthesis from 4-phenyl-1-butylamine, paraformaldehyde, and CrCl₃ was used as catalyst for polymn. of ethylene using methylalumininoxane as activators.

IT 431889-09-7P

(catalysts; prepn. of triazacyclohexane complexes of chromium as homogeneous model for Phillips catalyst CrO₃/SiO₂ for polymn. of ethylene)

RN 431889-09-7 HCA

CN Chromium, trichloro[hexahydro-1,3,5-tris(4-phenylbutyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



IT 9002-88-4P, Polyethylene

(prepn. of triazacyclohexane complexes of chromium as homogeneous model for Phillips catalyst CrO₃/SiO₂ for polymn. of ethylene)

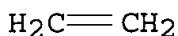
RN 9002-88-4 HCA

CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1

CMF C2 H4



CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 78

IT Aluminoxanes
 (Me, **activators**; prepn. of triazacyclohexane complexes
 of chromium as homogeneous model for Phillips catalyst CrO₃/SiO₂
 for polymn. of ethylene)

IT 431889-09-7P
 (catalysts; prepn. of triazacyclohexane complexes of chromium as
 homogeneous model for Phillips catalyst CrO₃/SiO₂ for polymn. of
 ethylene)

IT 9002-88-4P, **Polyethylene**
 (prepn. of triazacyclohexane complexes of chromium as homogeneous
 model for Phillips catalyst CrO₃/SiO₂ for polymn. of ethylene)

L58 ANSWER 2 OF 9 HCA COPYRIGHT 2002 ACS

135:344773 1,3,5-triazacyclohexane complexes of chromium as homogeneous
 model systems for the Phillips catalyst. Kohn, Randolph D.; Seifert,
 Guido; Kociok-Kohn, Gabriele; Mihan, Shahram; Lilge, Dieter; Maas,
 Heiko (Dept. of Chemistry, University of Bath, Bath, BA2 7AY, UK).
 Organometallic Catalysts and Olefin Polymerization, 147-155.
 Editor(s): Blom, Richard. Springer-Verlag: Berlin, Germany.
 (English) 2001. CODEN: 69BGVD.

AB 1,3,5-Triazacyclohexane complexes prepd. from N-substituted
 triazacyclohexanes and CrCl₃ can be activated by MAO or
 trialkylaluminum/dimethylanilinium tetrakis(pentafluorophenyl)
borate to give solns. that have unprecedented high
 activities in the polymn. and/or trimerization of ethylene,
 depending on the N-substituent. **.alpha.-Olefins** are
 selectively trimerized or co-polymerd. with ethylene. The
 N-substituents in sym.- and asym.-substituted triazacyclohexanes,
 including some with different functional groups, are varied in order
 to obtain a better understanding of their effect on catalysis. A
 detailed study of the activities and the polymer structures shows
 that these systems are very good models for the Phillips catalyst.
 The homogeneous reactions can be studied by several spectroscopic
 methods esp. for the **.alpha.-olefin** trimerization. The
 triazacyclohexane stays coordinated during the catalysis and that
 mono-nuclear metallacyclic complexes are likely involved.

IT 9002-88-4P, **Polyethylene**
 (activated N-substituted 1,3,5-triazacyclohexane complexes of
 chromium as homogeneous model systems for Phillips catalyst in
 polymn. and(or) trimerization of ethylene)

RN 9002-88-4 HCA
 CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
 CMF C2 H4

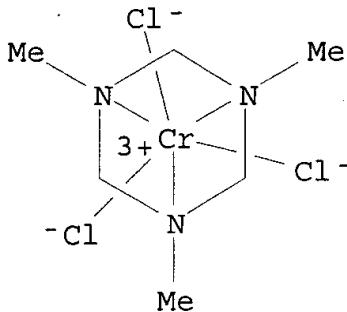
$\text{H}_2\text{C}=\text{CH}_2$

IT 175285-79-7

(polymn. catalyst oc-6-22; activated N-substituted 1,3,5-triazacyclohexane complexes of chromium as homogeneous model systems for Phillips catalyst in polymn. and(or) trimerization of ethylene)

RN 175285-79-7 HCA

CN Chromium, trichloro(hexahydro-1,3,5-trimethyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



IT 118612-00-3, Dimethylanilinium tetrakis(pentafluorophenyl) borate

(polymn. catalyst; activated N-substituted 1,3,5-triazacyclohexane complexes of chromium as homogeneous model systems for Phillips catalyst in polymn. and(or) trimerization of ethylene)

RN 118612-00-3 HCA

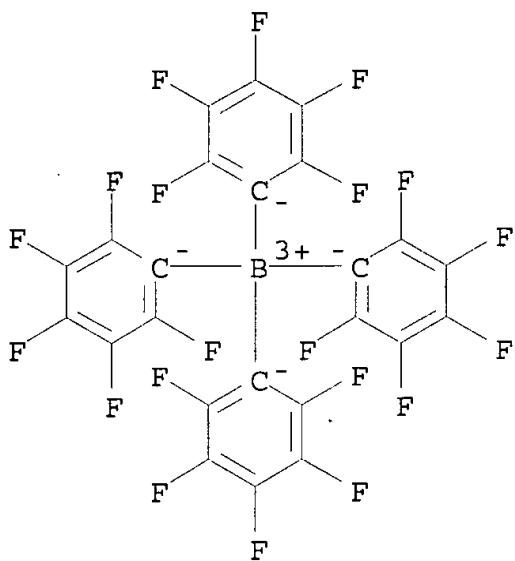
CN Borate(1-), tetrakis(pentafluorophenyl)-, hydrogen, compd. with N,N-dimethylbenzenamine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 118611-98-6

CMF C24 B F20 . H

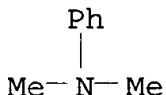
CCI CCS



● H⁺

CM 2

CRN 121-69-7
CMF C8 H11 N

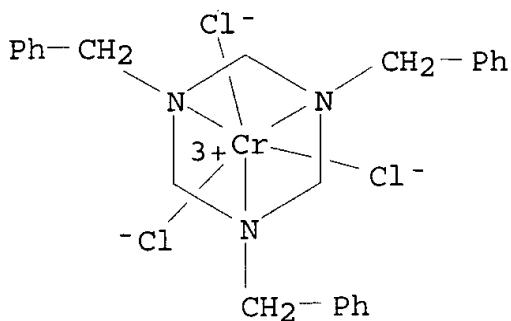


IT 172166-82-4 172166-83-5 246176-10-3
 275362-61-3 299176-12-8 299176-16-2
 299176-18-4 299176-19-5 299956-70-0
 299956-72-2 371238-49-2 371238-50-5
 371238-52-7

(polymn. catalyst; activated N-substituted 1,3,5-triazacyclohexane complexes of chromium as homogeneous model systems for Phillips catalyst in polymn. and(or) trimerization of ethylene)

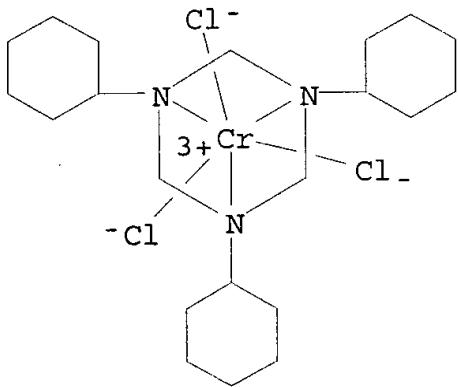
RN 172166-82-4 HCA

CN Chromium, trichloro[hexahydro-1,3,5-tris(phenylmethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



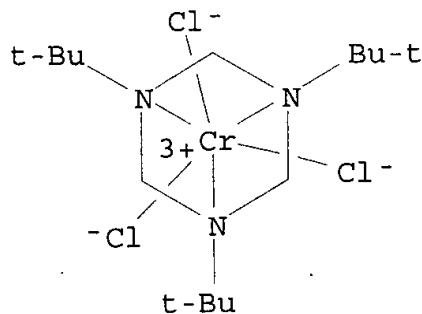
RN 172166-83-5 HCA

CN Chromium, trichloro(1,3,5-tricyclohexylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



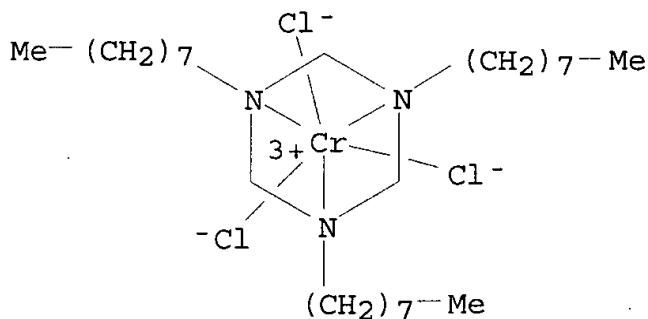
RN 246176-10-3 HCA

CN Chromium, trichloro[1,3,5-tris(1,1-dimethylethyl)hexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



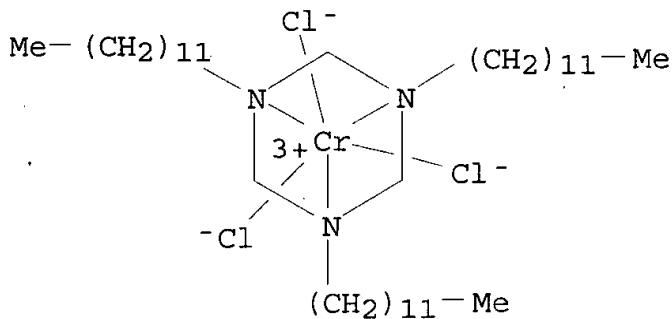
RN 275362-61-3 HCA

CN Chromium, trichloro(hexahydro-1,3,5-trioctyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



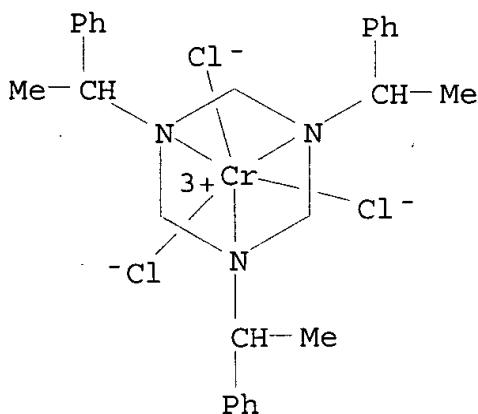
RN 299176-12-8 HCA

CN Chromium, trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



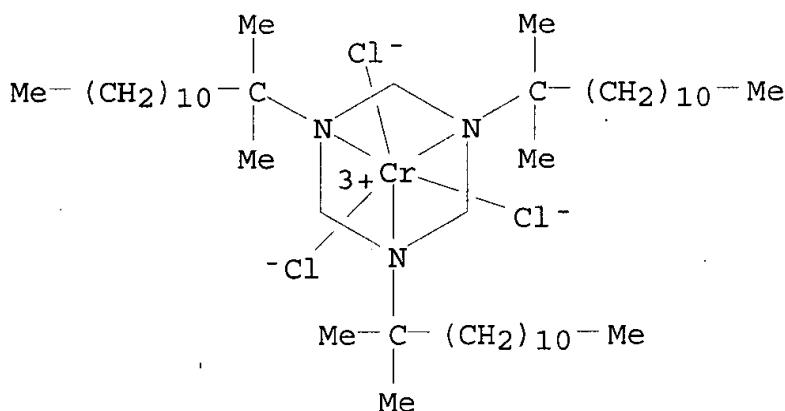
RN 299176-16-2 HCA

CN Chromium, trichloro[hexahydro-1,3,5-tris(1-phenylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



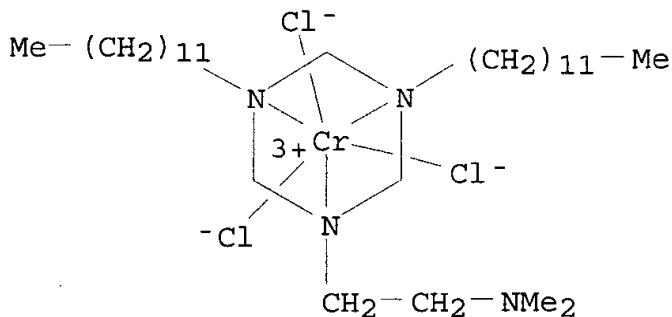
RN 299176-18-4 HCA

CN Chromium, trichloro[1,3,5-tris(1,1-dimethyldecyl)hexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



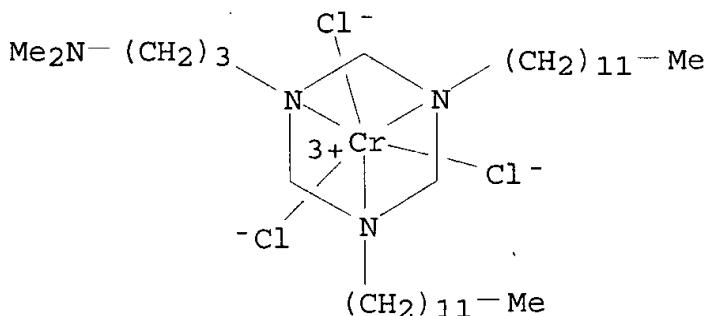
RN 299176-19-5 HCA

CN Chromium, trichloro(3,5-didodecyltetrahydro-N,N-dimethyl-1,3,5-triazine-1(2H)-ethanamine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-33)- (9CI) (CA INDEX NAME)



RN 299956-70-0 HCA

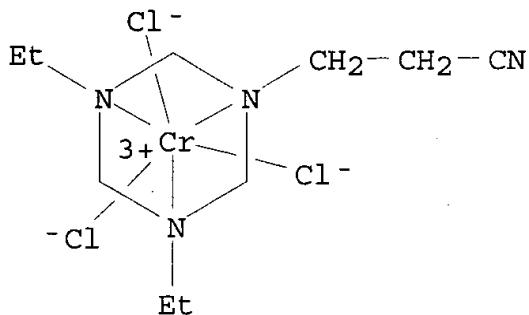
CN Chromium, trichloro(3,5-didodecyltetrahydro-N,N-dimethyl-1,3,5-triazine-1(2H)-propanamine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-33)- (9CI) (CA INDEX NAME)



RN 299956-72-2 HCA

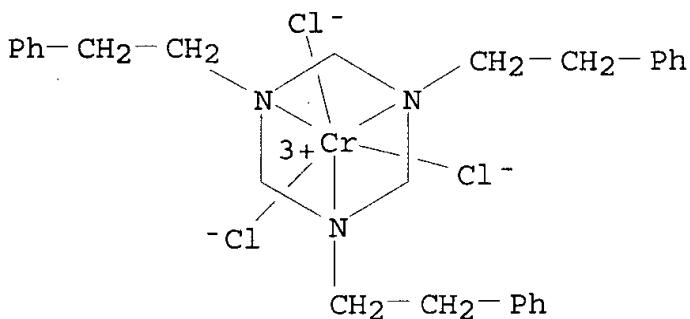
CN Chromium, trichloro(3,5-diethyltetrahydro-1,3,5-triazine-1(2H)-)

propanenitrile-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-33)- (9CI)
(CA INDEX NAME)



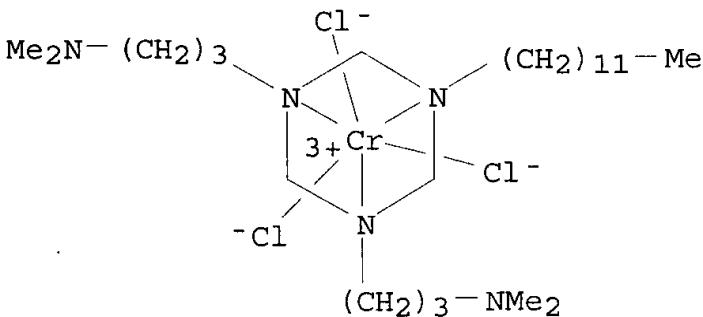
RN 371238-49-2 HCA

CN Chromium, trichloro[hexahydro-1,3,5-tris(2-phenylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 371238-50-5 HCA

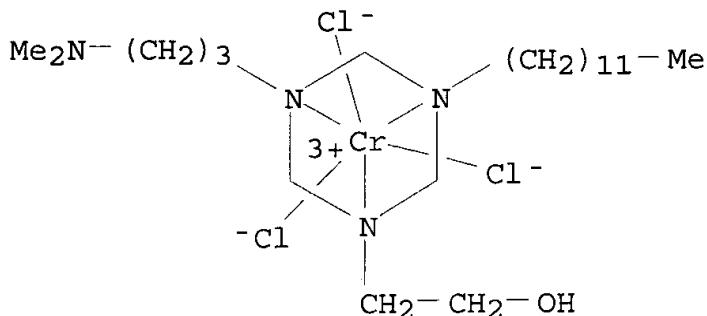
CN Chromium, trichloro(5-dodecyldihydro-N,N,N',N'-tetramethyl-1,3,5-triazine-1,3(2H,4H)-dipropanamine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-32)- (9CI) (CA INDEX NAME)



RN 371238-52-7 HCA

CN Chromium, trichloro[3-[3-(dimethylamino)propyl]-5-dodecyltetrahydro-1,3,5-triazine-1(2H)-ethanol-.kappa.N1,.kappa.N3,.kappa.N5]-,

(OC-6-43) - (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)
 IT 592-41-6P, 1-Hexene, preparation 9002-88-4P,
Polyethylene

(activated N-substituted 1,3,5-triazacyclohexane complexes of chromium as homogeneous model systems for Phillips catalyst in polymn. and(or) trimerization of ethylene)

IT 175285-79-7

(polymn. catalyst OC-6-22; activated N-substituted 1,3,5-triazacyclohexane complexes of chromium as homogeneous model systems for Phillips catalyst in polymn. and(or) trimerization of ethylene)

IT 100-99-2, Tri-isobutylaluminum, uses 118612-00-3,
 Dimethylanilinium tetrakis(pentafluorophenyl)borate

(polymn. catalyst; activated N-substituted 1,3,5-triazacyclohexane complexes of chromium as homogeneous model systems for Phillips catalyst in polymn. and(or) trimerization of ethylene)

IT 172166-82-4 172166-83-5 246176-10-3
 275362-61-3 299176-12-8 299176-16-2
 299176-18-4 299176-19-5 299956-70-0
 299956-72-2 371238-49-2 371238-50-5
 371238-52-7

(polymn. catalyst; activated N-substituted 1,3,5-triazacyclohexane complexes of chromium as homogeneous model systems for Phillips catalyst in polymn. and(or) trimerization of ethylene)

L58 ANSWER 3 OF 9 HCA COPYRIGHT 2002 ACS

134:29723 Triazacyclohexane complexes of chromium as highly active homogeneous model systems for the Phillips catalyst. Kohn, Randolph D.; Haufe, Matthias; Mihan, Shahram; Lilge, Dieter (Dep. Chem., University of Bath, Bath, BA2 7AY, UK). Chemical Communications (Cambridge) (19), 1927-1928 (English) 2000. CODEN: CHCOFS. ISSN: 1359-7345. Publisher: Royal Society of Chemistry.

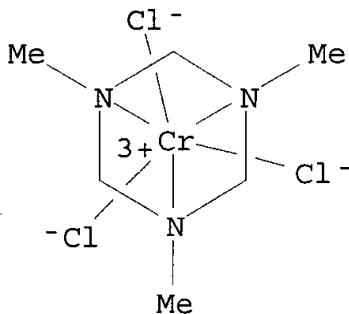
AB MAO-activated 1,3,5-trialkyl-1,3,5-triazacyclohexane complexes of CrCl₃ are highly active ethene polymn. catalysts that resemble the Phillips catalyst in many important properties and may represent the first good homogeneous model system.

IT 175285-79-7P 275362-61-3P 299176-12-8P
 311778-19-5P

(catalyst; triazacyclohexane complexes of chromium as highly active homogeneous system catalysts for ethylene polymn.)

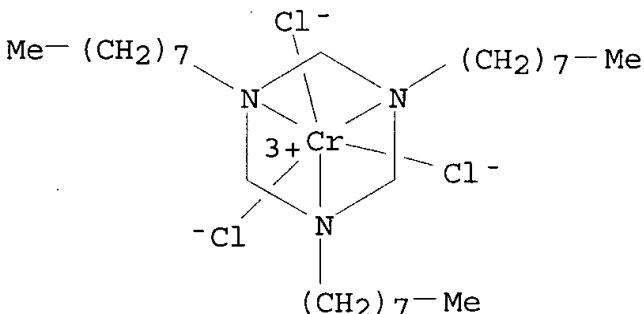
RN 175285-79-7 HCA

CN Chromium, trichloro(hexahydro-1,3,5-trimethyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



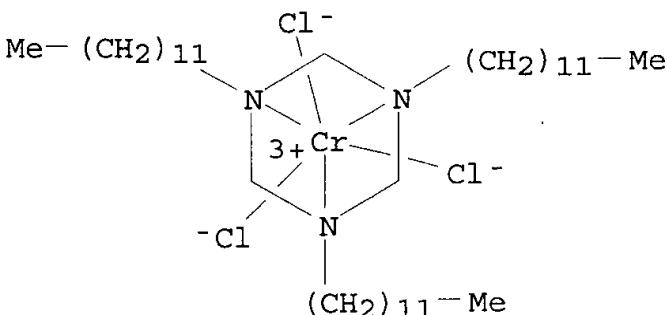
RN 275362-61-3 HCA

CN Chromium, trichloro(hexahydro-1,3,5-trioctyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



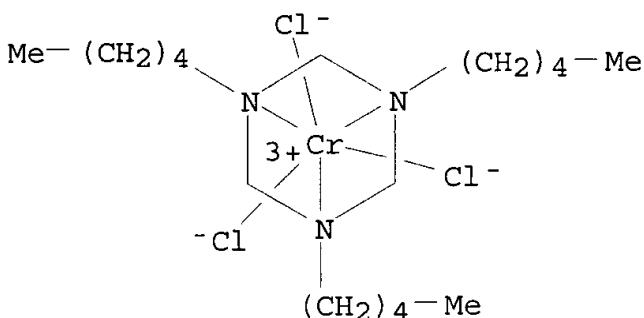
RN 299176-12-8 HCA

CN Chromium, trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 311778-19-5 HCA

CN Chromium, trichloro(hexahydro-1,3,5-tripentyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



IT 118612-00-3

(cocatalyst; triazacyclohexane complexes of chromium as highly active homogeneous system catalysts for **ethylene** **polymn.**)

RN 118612-00-3 HCA

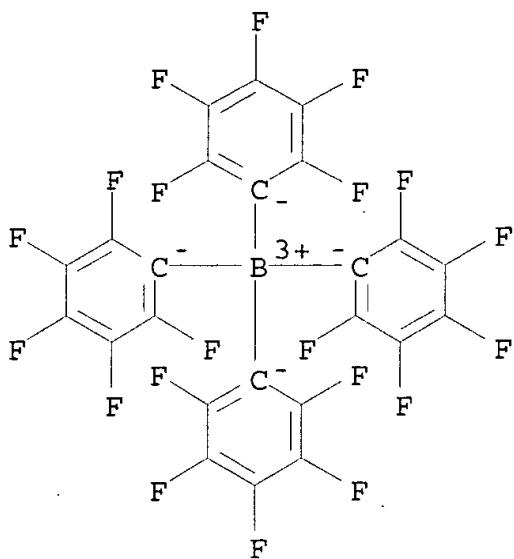
CN Borate(1-), tetrakis(pentafluorophenyl)-, hydrogen, compd. with N,N-dimethylbenzenamine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 118611-98-6

CMF C24 B F20 . H

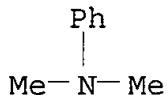
CCI CCS



● H⁺

CM 2

CRN 121-69-7
CMF C8 H11 N



IT 9002-88-4P, Polyethylene

(triazacyclohexane complexes of chromium as highly active homogeneous system catalysts for ethylene polymn.)

RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

H₂C=CH₂

CC 35-3 (Chemistry of Synthetic High Polymers)

ST Section cross-reference(s): 78
 chromium triazacyclohexane complex catalyst **polymn**
ethylene

IT Polymerization catalysts
 (Phillips catalyst model; prepn. of triazacyclohexane complexes
 of chromium as highly active homogeneous system catalysts for
ethylene polymn.)

IT 175285-79-7P 275362-61-3P 299176-12-8P
 311778-19-5P
 (catalyst; triazacyclohexane complexes of chromium as highly
 active homogeneous system catalysts for **ethylene**
polymn.)

IT 100-99-2, Triisobutylaluminum, uses 118612-00-3
 (cocatalyst; triazacyclohexane complexes of chromium as highly
 active homogeneous system catalysts for **ethylene**
polymn.)

IT 592-41-6P, 1-Hexene, preparation 25339-53-1P, Decene
 (from **ethylene polymn.** in presence of
 triazacyclohexane chromium complexes)

IT 108-74-7, 1,3,5-Trimethyl-1,3,5-triazacyclohexane 6281-19-2
 10025-73-7, Chromium trichloride 10170-68-0 51570-89-9
 94279-01-3
 (starting material; prepn. of triazacyclohexane complexes of
 chromium as highly active homogeneous system catalysts for
ethylene polymn.)

IT 9002-88-4P, **Polyethylene** 25213-02-9P,
 Ethylene-1-hexene copolymer
 (triazacyclohexane complexes of chromium as highly active
 homogeneous system catalysts for **ethylene**
polymn.)

L58 ANSWER 4 OF 9 HCA COPYRIGHT 2002 ACS

133:282219 Process and catalysts for the polymerization of
olefins. Mihan, Shahram; Lilge, Dieter; Schweier, Gunther;
 Kohn, Randolph; Seifert, Guido (BASF Aktiengesellschaft, Germany).
 PCT Int. Appl. WO 2000058369 A1 20001005, 33 pp. DESIGNATED STATES:
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR,
 CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID,
 IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,
 MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,
 SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY,
 KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY,
 DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT,
 SE, SN, TD, TG. (German). CODEN: PIXXD2. APPLICATION: WO
 2000-EP2383 20000317. PRIORITY: US 1999-277823 19990329; DE
 1999-19922048 19990514; DE 1999-19935407 19990730.

AB **Olefins** are polymd. in the presence of catalysts which
 contain (a) .gtoreq.1 transition metal complex with a tridentate
 macrocyclic ligand, which in addn. comprises .gtoreq.1 functional
 substituent, and optionally (b) one or more **activator**
 compds., esp. of the types usually used with metallocene catalysts.
 Preferably the ligand is a macrocycle contg. 3 nonadjacent N and/or

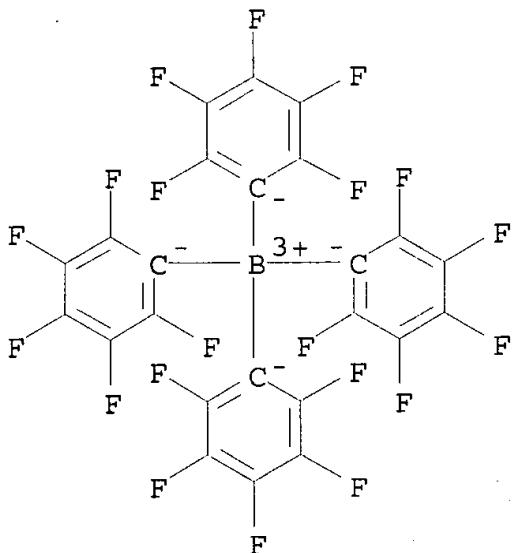
P atoms in the ring, the remaining ring atoms being C and/or Si. Thus, a soln. of 1-(2-hydroxyoctyl)-1,4,7-triazacyclononane in THF was treated with BuLi, and (THF)3CrCl3 was added to form a Cr complex in 75% yield. Ethylene was polymd. at 40.degree. in toluene contg. the complex and Me aluminoxane at Al-Cr molar ratio 330:1 to give **Polyethylene** of wt.-av. mol. wt. 205,282 and polydispersity 3.93 with catalyst activity 680 kg polymer/mol Cr per h.

IT 118612-00-3, Dimethylanilinium tetrakis(pentafluorophenyl)borate 136040-19-2, Trityl tetrakis(pentafluorophenyl)borate (catalyst activator; transition metal complexes with tridentate macrocyclic ligands as olefin polymer catalysts)

RN 118612-00-3 HCA
 CN Borate(1-), tetrakis(pentafluorophenyl)-, hydrogen, compd. with N,N-dimethylbenzenamine (1:1) (9CI) (CA INDEX NAME)

CM 1

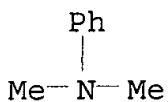
CRN 118611-98-6
 CMF C24 B F20 . H
 CCI CCS

● H⁺

CM 2

CRN 121-69-7

CMF C8 H11 N



RN 136040-19-2 HCA

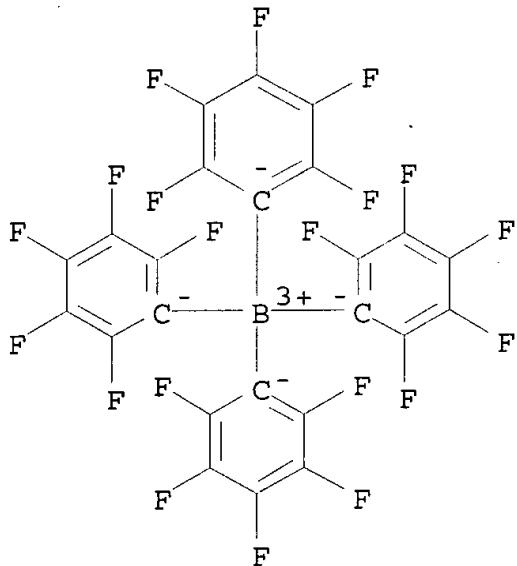
CN Methylium, triphenyl-, tetrakis(pentafluorophenyl)borate(1-) (9CI)
(CA INDEX NAME)

CM 1

CRN 47855-94-7

CMF C24 B F20

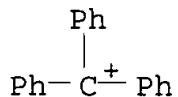
CCI CCS



CM 2

CRN 13948-08-8

CMF C19 H15

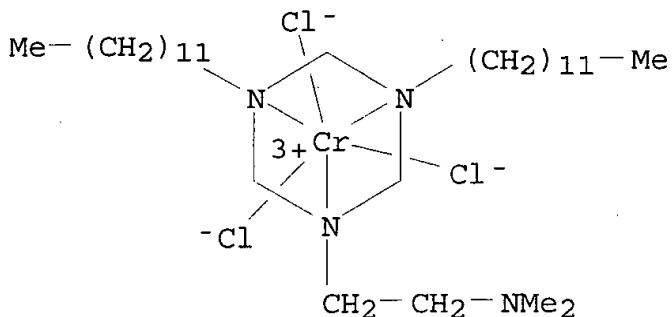
IT 299176-19-5P 299956-68-6P 299956-70-0P
299956-72-2P 299956-74-4P 299956-77-7P
299956-81-3P

(transition metal complexes with tridentate macrocyclic ligands)

as olefin polymn. catalysts)

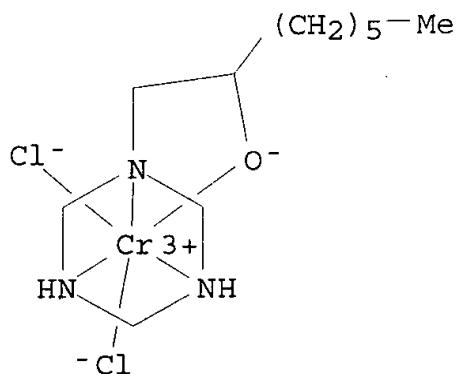
RN 299176-19-5 HCA

CN Chromium, trichloro(3,5-didodecyltetrahydro-N,N-dimethyl-1,3,5-triazine-1(2H)-ethanamine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-33)- (9CI) (CA INDEX NAME)



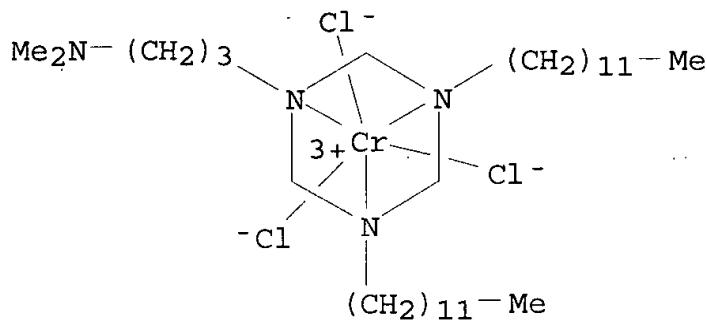
RN 299956-68-6 HCA

CN Chromium, dichloro(.alpha.-hexyltetrahydro-1,3,5-triazine-1(2H)-ethanolato-.kappa.N1,.kappa.N3,.kappa.N5,.kappa.O1)-, (OC-6-43)- (9CI) (CA INDEX NAME)



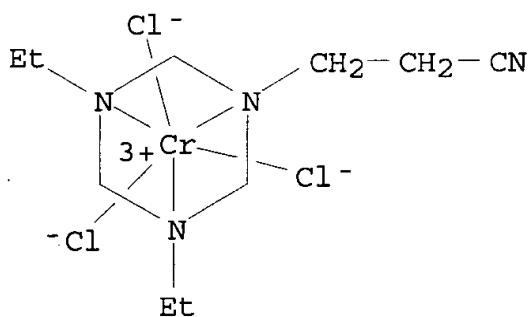
RN 299956-70-0 HCA

CN Chromium, trichloro(3,5-didodecyltetrahydro-N,N-dimethyl-1,3,5-triazine-1(2H)-propanamine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-33)- (9CI) (CA INDEX NAME)



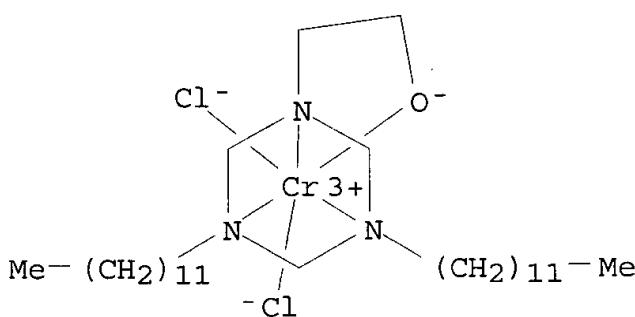
RN 299956-72-2 HCA

CN Chromium, trichloro(3,5-diethyltetrahydro-1,3,5-triazine-1(2H)-propanenitrile-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-33)- (9CI) (CA INDEX NAME)



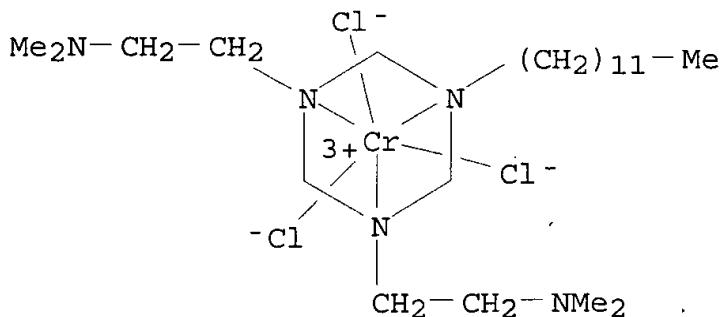
RN 299956-74-4 HCA

CN Chromium, dichloro(3,5-didodecyltetrahydro-1,3,5-triazine-1(2H)-ethanolato-.kappa.N1,.kappa.N3,.kappa.N5,.kappa.O1)-, (OC-6-43)- (9CI) (CA INDEX NAME)

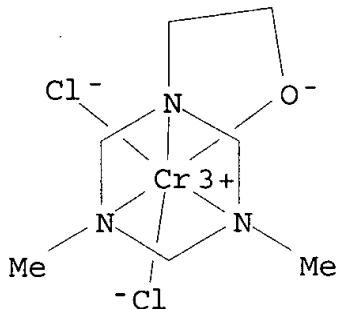


RN 299956-77-7 HCA

CN Chromium, trichloro(5-dodecyldihydro-N,N,N',N'-tetramethyl-1,3,5-triazine-1,3(2H,4H)-diethanamine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-32)- (9CI) (CA INDEX NAME)



RN 299956-81-3 HCA
 CN Chromium, dichloro(tetrahydro-3,5-dimethyl-1,3,5-triazine-1(2H)-ethanolato-.kappa.N1,.kappa.N3,.kappa.N5,.kappa.O1)-, (OC-6-43)-(9CI) (CA INDEX NAME)



IT 9002-88-4P
 (transition metal complexes with tridentate macrocyclic ligands as **olefin polymer** catalysts)
 RN 9002-88-4 HCA
 CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
 CMF C2 H4

H₂C=CH₂

IC ICM C08F010-00
 ICS C08F004-625
 CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 67, 78
 ST **olefin polymer** transition metal complex catalyst;
 tetradentate ligand transition metal complex
 IT Aluminoxanes
 (Me, catalyst **activator**; transition metal complexes
 with tridentate macrocyclic ligands as **olefin**

polymn. catalysts)

IT Polymerization catalysts
(transition metal complexes with tridentate macrocyclic ligands as **olefin polymn. catalysts**)

IT 1109-15-5, Tris(pentafluorophenyl)**borane**
118612-00-3, Dimethylanilinium tetrakis(pentafluorophenyl)
borate 136040-19-2, Trityl
tetrakis(pentafluorophenyl)**borate**
(catalyst **activator**; transition metal complexes with
tridentate macrocyclic ligands as **olefin polymn.**
. catalysts)

IT 6281-19-2P, 1,3,5-Tridodecylhexahydro-1,3,5-triazine
(prepn. of transition metal complexes as **olefin**
polymn. catalysts)

IT 50-00-0, Formaldehyde, reactions 75-04-7, Ethylamine, reactions
108-00-9, 2-(Dimethylamino)ethylamine 108-74-7,
1,3,5-Trimethylhexahydro-1,3,5-triazine 109-55-7,
3-(Dimethylamino)propylamine 124-22-1, 1-Aminododecane 141-43-5,
reactions 151-18-8, 3-Aminopropionitrile 7779-27-3,
1,3,5-Triethylhexahydro-1,3,5-triazine 299956-69-7,
1-(2-Hydroxyoctyl)-1,4,7-triazacyclononane
(prepn. of transition metal complexes as **olefin**
polymn. catalysts)

IT 147163-87-9P, 1-[3-(Dimethylamino)propyl]-3,5-didodecylhexahydro-
1,3,5-triazine 299956-71-1P, 1-(2-Cyanoethyl)-3,5-diethylhexahydro-
1,3,5-triazine 299956-73-3P 299956-75-5P, 1-[2-
(Dimethylamino)ethyl]-3,5-didodecylhexahydro-1,3,5-triazine
299956-76-6P, 1,3-Bis[2-(dimethylamino)ethyl]-5-dodecylhexahydro-
1,3,5-triazine 299956-80-2P
(prepn. of transition metal complexes as **olefin**
polymn. catalysts)

IT 83936-26-9P 299956-78-8P, 1,3,5-Tris[3-(3-
ethylhexyloxy)propyl]hexahydro-1,3,5-triazine 299956-79-9P,
Hexahydro-1,3,5-tris[3-(2-methoxyethoxy)propyl]-1,3,5-triazine
(prepn. of transition metal complexes as **olefin**
polymn. catalysts)

IT 100-99-2, Triisobutylaluminum, uses
(transition metal complexes with tridentate macrocyclic ligands
as **olefin polymn. catalysts**)

IT 299176-19-5P 299956-68-6P 299956-70-0P
299956-72-2P 299956-74-4P 299956-77-7P
299956-81-3P
(transition metal complexes with tridentate macrocyclic ligands
as **olefin polymn. catalysts**)

IT 9002-88-4P
(transition metal complexes with tridentate macrocyclic ligands
as **olefin polymn. catalysts**)

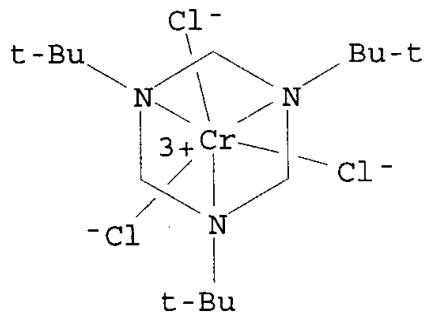
20001005, 35 pp. DESIGNATED STATES: W: CN, JP, KR, SG, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (German). CODEN: PIXXD2. APPLICATION: WO 2000-EP2660 20000325. PRIORITY: US 1999-277823 19990329; DE 1999-19922048 19990514; DE 1999-19943544 19990911.

AB An oligomerization catalyst for **olefins** is obtained from (a) a chromium compd. CrX₃ and at least an equimolar amt. of a ligand L or a complex CrX₃L, wherein the groups X each represent abstractable counter-ions and L represents a hexahydro-s-triazine optionally substituted with organosilyl and/or C₁-30 org. groups, and (b) .gtoreq.1 activating additive. **Olefin** oligomers prep'd. with these catalysts are esp. suitable for hydroformylation to alcs. Thus, addn. of 1-octanamine to a soln. of paraformaldehyde in toluene gave hexahydro-1,3,5-trioctyl-1,3,5-triazine in 83% yield, reaction of which with (THF)₃CrCl₃ gave a Cr complex catalyst. Oligomerization of ethylene in heptane in the presence of the catalyst, 2,5-dimethylpyrrole, and Et₃Al gave (per g Cr) 18.6 kg product comprising hexenes 44.4, decenes 33.1, and tetradecenes 10.9 wt.%.

IT 246176-10-3, Trichloro(1,3,5-tri-tert-butylhexahydro-1,3,5-triazine)chromium 299176-12-8, Trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine)chromium 299176-15-1, Trichloro(1,3,5-triethylhexahydro-1,3,5-triazine)chromium 299176-16-2, Trichloro[hexahydro-1,3,5-tris(1-phenylethyl)-1,3,5-triazine]chromium 299176-18-4, Trichloro[1,3,5-tris(1,1-dimethyldecyl)hexahydro-1,3,5-triazine]chromium 299176-19-5, Trichloro[1-[2-(dimethylamino)ethyl]-3,5-didodecylhexahydro-1,3,5-triazine]chromium 299176-21-9, Trichloro[hexahydro-1,3,5-tris(2-propylheptyl)-1,3,5-triazine]chromium (chromium complex oligomerization catalyst for **olefins**)

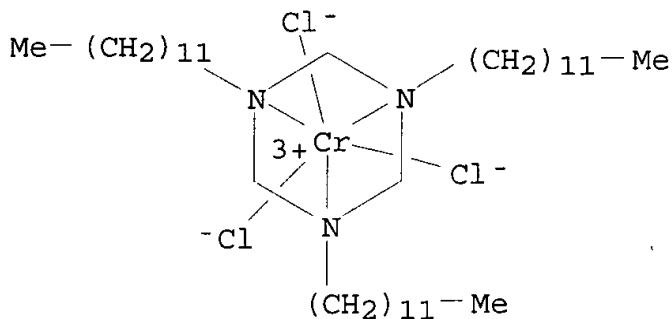
RN 246176-10-3 HCA

CN Chromium, trichloro[1,3,5-tris(1,1-dimethylethyl)hexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)

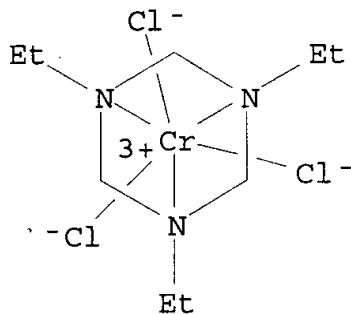


RN 299176-12-8 HCA

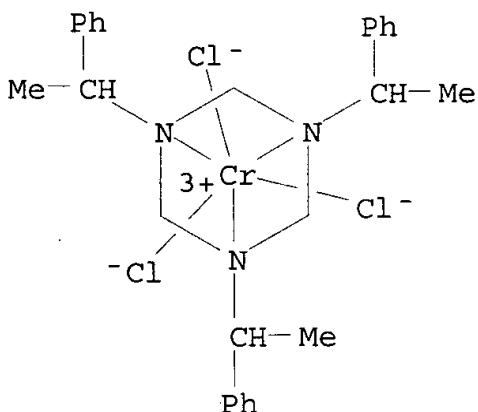
CN Chromium, trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



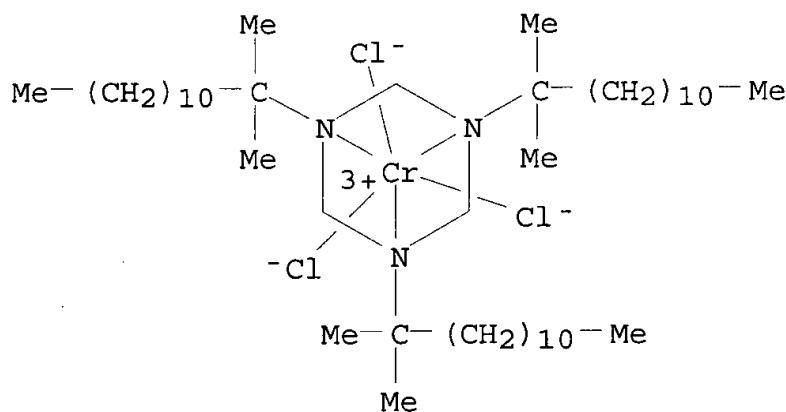
RN 299176-15-1 HCA
 CN Chromium, trichloro(1,3,5-triethylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 299176-16-2 HCA
 CN Chromium, trichloro[hexahydro-1,3,5-tris(1-phenylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)

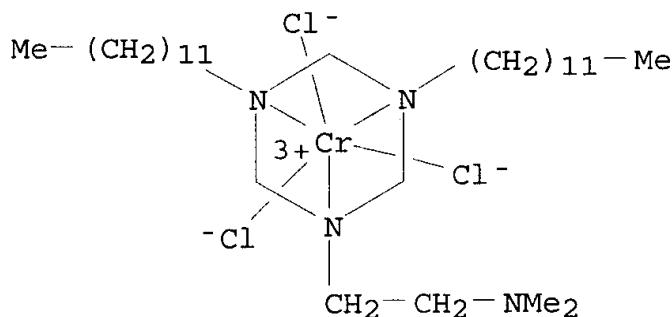


RN 299176-18-4 HCA
 CN Chromium, trichloro[1,3,5-tris(1,1-dimethyldodecyl)hexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



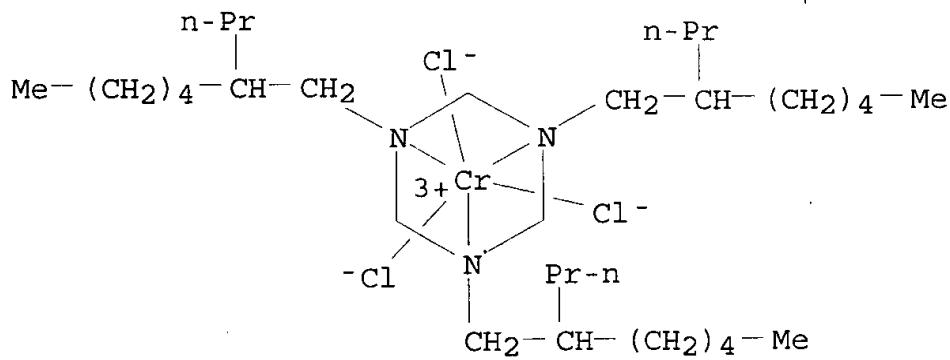
RN 299176-19-5 HCA

CN Chromium, trichloro(3,5-didodecyltetrahydro-N,N-dimethyl-1,3,5-triazine-1(2H)-ethanamine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-33)- (9CI) (CA INDEX NAME)



RN 299176-21-9 HCA

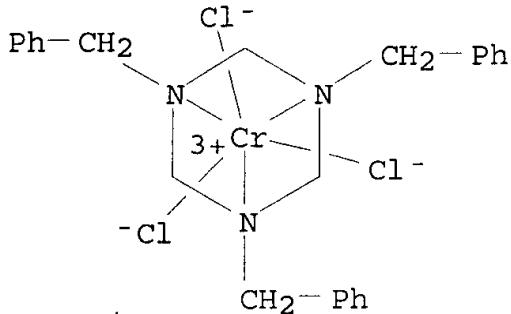
CN Chromium, trichloro[hexahydro-1,3,5-tris(2-propylheptyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



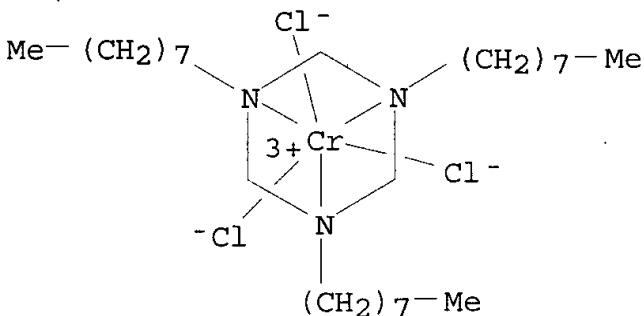
IT 172166-82-4P, Trichloro(1,3,5-tribenzylhexahydro-1,3,5-

triazine)chromium 275362-61-3P, Trichloro(hexahydro-1,3,5-trioctyl-1,3,5-triazine)chromium 275362-63-5P,
Trichloro[1,3,5-tris(2-ethylhexyl)hexahydro-1,3,5-triazine]chromium
(chromium complex oligomerization catalyst for **olefins**)

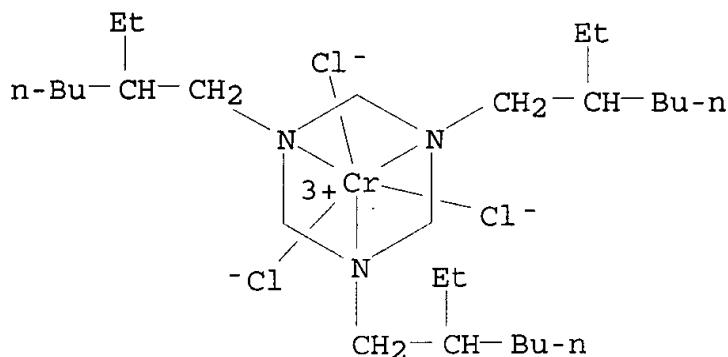
RN 172166-82-4 HCA
CN Chromium, trichloro[hexahydro-1,3,5-tris(phenylmethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 275362-61-3 HCA
CN Chromium, trichloro(hexahydro-1,3,5-trioctyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 275362-63-5 HCA
CN Chromium, trichloro[1,3,5-tris(2-ethylhexyl)hexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



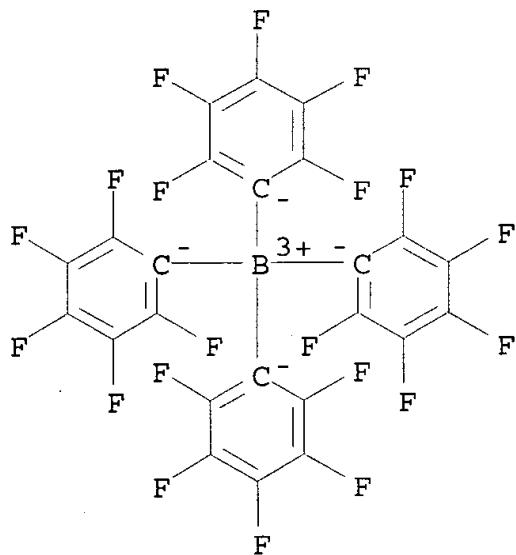
IT 118612-00-3, Dimethylanilinium tetrakis(pentafluorophenyl) borate
 (cocatalyst; chromium complex oligomerization catalyst for olefins)

RN 118612-00-3 HCA

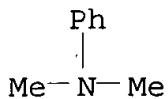
CN Borate(1-), tetrakis(pentafluorophenyl)-, hydrogen, compd. with N,N-dimethylbenzenamine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 118611-98-6
 CMF C24 B F20 . H
 CCI CCS

 H^+

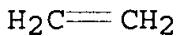
CM 2

CRN 121-69-7
CMF C8 H11 N

IT 9002-88-4P, Polyethylene 9003-28-5P,
 Poly-1-butene
 (oligomeric; chromium complex oligomerization catalyst for
 olefins)

RN 9002-88-4 HCA
 CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

RN 9003-28-5 HCA
 CN 1-Butene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-98-9
CMF C4 H8

IC ICM C07F011-00
 ICS C07C029-16; C07C002-32; B01J031-18
 CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 67
 ST olefin oligomerization catalyst chromium complex;
 trialkylhexahydrotriazine chromium complex
 IT Alcohols, preparation
 (C13 aliph.; from hydroformylation of olefin oligomers
 formed with chromium complex catalyst)
 IT Aluminoxanes
 (Me, cocatalyst; chromium complex oligomerization catalyst for
 olefins)
 IT Hydroformylation
 (of olefin oligomers formed with chromium complex
 catalyst)

IT Polymerization catalysts
(oligomerization; chromium complex oligomerization catalyst for **olefins**)

IT 246176-10-3, Trichloro(1,3,5-tri-tert-butylhexahydro-1,3,5-triazine)chromium 299176-12-8, Trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine)chromium 299176-15-1, Trichloro(1,3,5-triethylhexahydro-1,3,5-triazine)chromium 299176-16-2, Trichloro[hexahydro-1,3,5-tris(1-phenylethyl)-1,3,5-triazine]chromium 299176-18-4, Trichloro[1,3,5-tris(1,1-dimethyldodecyl)hexahydro-1,3,5-triazine]chromium 299176-19-5, Trichloro[1-[2-(dimethylamino)ethyl]-3,5-didodecylhexahydro-1,3,5-triazine]chromium 299176-21-9, Trichloro[hexahydro-1,3,5-tris(2-propylheptyl)-1,3,5-triazine]chromium
(chromium complex oligomerization catalyst for **olefins**)

IT 172166-82-4P, Trichloro(1,3,5-tribenzylhexahydro-1,3,5-triazine)chromium 275362-61-3P, Trichloro(hexahydro-1,3,5-trioctyl-1,3,5-triazine)chromium 275362-63-5P, Trichloro[1,3,5-tris(2-ethylhexyl)hexahydro-1,3,5-triazine]chromium
(chromium complex oligomerization catalyst for **olefins**)

IT 25264-93-1P, Hexene 25339-53-1P, Decene 26952-13-6P, Tetradecene
(chromium complex oligomerization catalyst for **olefins**)

IT 82983-62-8P, 1-Butene trimer
(chromium complex oligomerization catalyst for **olefins**)

IT 94279-01-3P
(chromium complex oligomerization catalyst for **olefins**)

IT 97-93-8, Triethylaluminum, uses 109-65-9, Butyl bromide 563-43-9, Ethylaluminum dichloride, uses 625-84-3, 2,5-Dimethylpyrrole 118612-00-3, Dimethylanilinium tetrakis(pentafluorophenyl)**borate**
(cocatalyst; chromium complex oligomerization catalyst for **olefins**)

IT 10210-68-1, Dicobalt octacarbonyl 14874-82-9, (Acetylacetato)dicarbonylrhodium
(hydroformylation catalyst for **olefin** oligomers formed with chromium complex catalyst)

IT 143-07-7D, Lauric acid, reaction products with polyethylenimine 9002-98-6D, Polyethylenimine, reaction products with lauric acid
(in hydroformylation of **olefin** oligomers formed with chromium complex catalyst)

IT 9002-88-4P, Polyethylene 9003-28-5P, Poly-1-butene 25067-06-5P, Poly-1-hexene 25213-02-9P, Ethylene-1-hexene copolymer
(oligomeric; chromium complex oligomerization catalyst for **olefins**)

IT 50-00-0, Formaldehyde, reactions 104-75-6, 2-Ethylhexylamine 111-86-4, 1-Octanamine
(prepn. of chromium complex oligomerization catalyst for **olefins**)

the use of vanadium or chromium complex catalysts. Tani, Kazuhide; Majima, Kazushi; Oshiki, Toshiyuki; Urata, Takao (Mitsubishi Chemical Industries Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10231317 A2 19980902 Heisei, 12 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1997-33631 19970218.

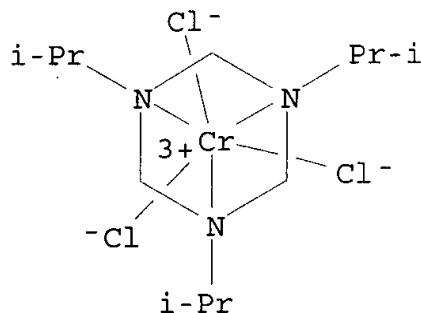
AB Title polymers are prep'd. by polymg. *alpha.-olefins* in liq. phase in the presence of .gtoreq.2 catalyst components consisting of V or Cr complexes with polydentate N compd. ligands and alkylaluminium compds. The main product is hexene. Thus, 50 mL ethylene was treated with 0.15 mmol AlEt₃ and 15 .mu.mol VCl₃-1,3,5-triisopropylhexahydro-1,3,5-triazine complex in 6 mL cyclohexane at 20.degree. for 4 h to give **Polyethylene** in a yield of 4 g-polymer/g-V.cntdot.h.

IT 175362-04-6P 212751-90-1P 212751-91-2P
 212751-92-3P 212751-93-4P 212751-94-5P
 212751-95-6P 212751-96-7P 212751-97-8P
 212751-98-9P

(manuf. of *alpha.-olefin polymers* with vanadium or chromium complex catalysts)

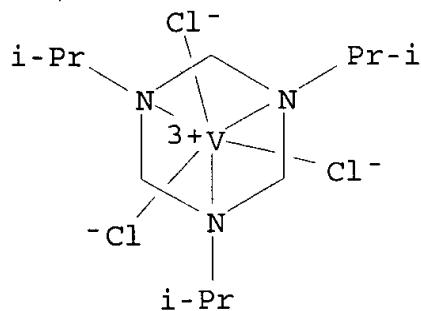
RN 175362-04-6 HCA

CN Chromium, trichloro[hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)

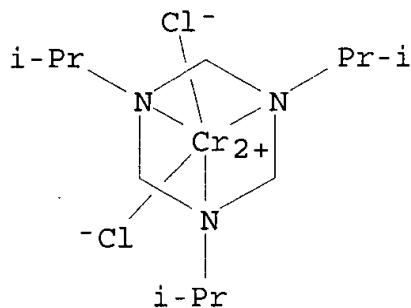


RN 212751-90-1 HCA

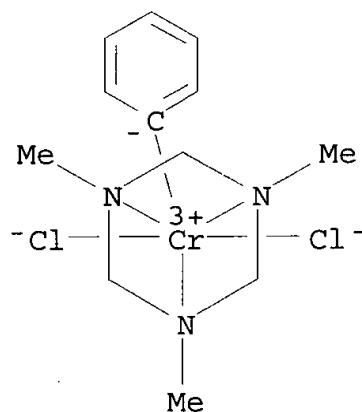
CN Vanadium, trichloro[hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



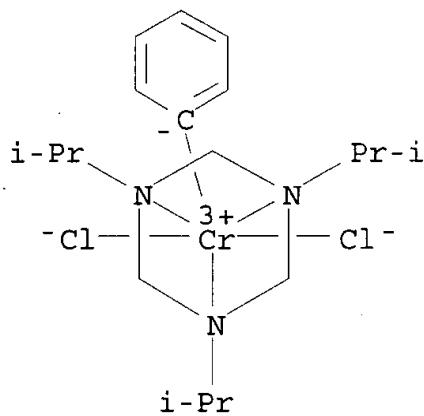
RN 212751-91-2 HCA
 CN Chromium, dichloro[hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]- (9CI) (CA INDEX NAME)



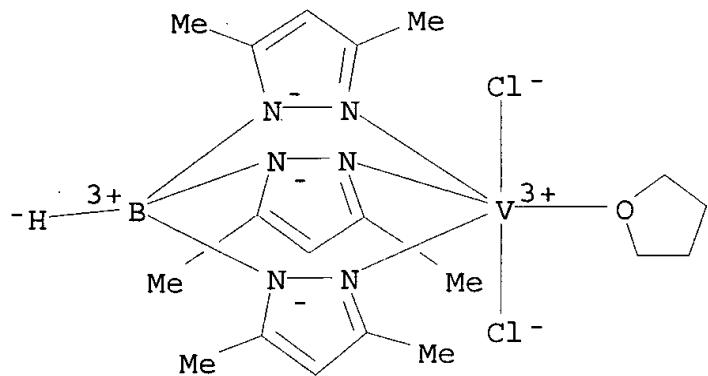
RN 212751-92-3 HCA
 CN Chromium, dichloro(hexahydro-1,3,5-trimethyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)phenyl-, (OC-6-22)- (9CI) (CA INDEX NAME)



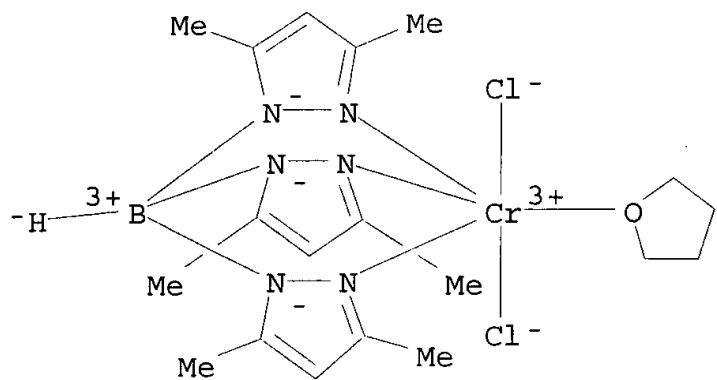
RN 212751-93-4 HCA
 CN Chromium, dichloro[hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]phenyl-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 212751-94-5 HCA
 CN Vanadium, dichloro(tetrahydrofuran) [tris(3,5-dimethyl-1H-pyrazolato-.kappa.N1)hydroborato(1-)-.kappa.N2,.kappa.N2',.kappa.N2'']-,
 (OC-6-33)- (9CI) (CA INDEX NAME)

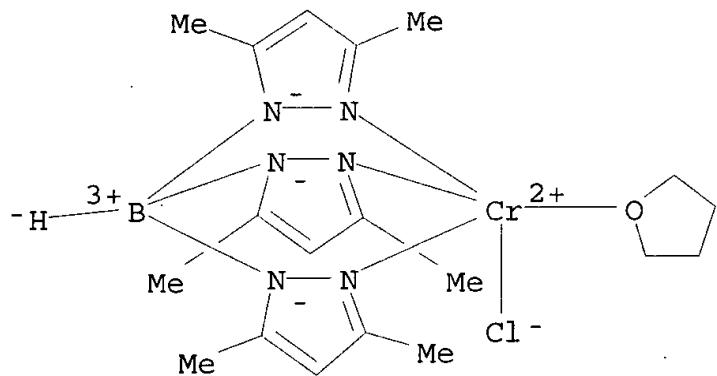


RN 212751-95-6 HCA
 CN Chromium, dichloro(tetrahydrofuran) [tris(3,5-dimethyl-1H-pyrazolato-.kappa.N1)hydroborato(1-)-.kappa.N2,.kappa.N2',.kappa.N2'']-,
 (OC-6-33)- (9CI) (CA INDEX NAME)



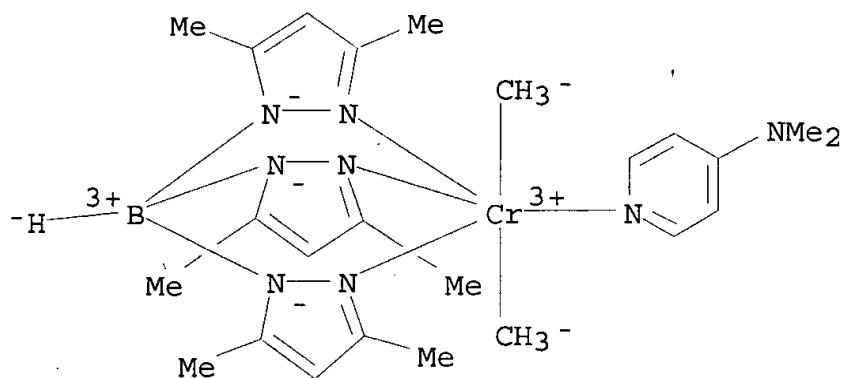
RN 212751-96-7 HCA

CN Chromium, chloro(tetrahydrofuran)[tris(3,5-dimethyl-1H-pyrazolato-.kappa.N1)hydroborato(1-)-.kappa.N2,.kappa.N2',.kappa.N2'']- (9CI) (CA INDEX NAME)

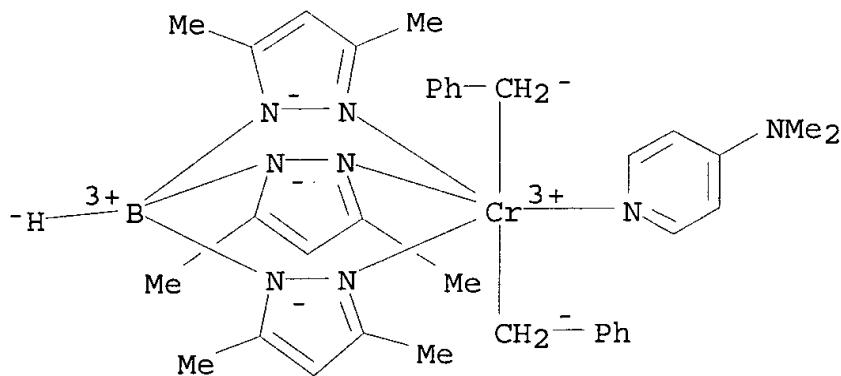


RN 212751-97-8 HCA

CN Chromium, (N,N-dimethyl-4-pyridinamine-.kappa.N1)dimethyl[tris(3,5-dimethyl-1H-pyrazolato-.kappa.N1)hydroborato(1-)-.kappa.N2,.kappa.N2',.kappa.N2'']-, (OC-6-33)- (9CI) (CA INDEX NAME)



RN 212751-98-9 HCA
 CN Chromium, (N,N-dimethyl-4-pyridinamine-.kappa.N1)bis(phenylmethyl) [tris(3,5-dimethyl-1H-pyrazolato-.kappa.N1)hydroborato(1-)-.kappa.N2,.kappa.N2',.kappa.N2'']-, (OC-6-33)- (9CI) (CA INDEX NAME)



IT 9002-88-4P
 (manuf. of .alpha.-olefin polymers with vanadium or chromium complex catalysts)
 RN 9002-88-4 HCA
 CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4H₂C=CH₂

IC ICM C08F004-68
 ICS C08F004-69; C08F010-00
 CC 35-4 (Chemistry of Synthetic High Polymers)

ST Section cross-reference(s): 67
 vanadium triisopropylhexahydro triazine complex catalyst
polyethylene

IT Polymerization catalysts
 (manuf. of .alpha.-**olefin polymers** with
 vanadium or chromium complex catalysts)

IT **Polyolefins**
 (manuf. of .alpha.-**olefin polymers** with
 vanadium or chromium complex catalysts)

IT 97-93-8, Triethylaluminum, uses 1109-15-5, Tris(pentafluorophenyl)
borane
 (manuf. of .alpha.-**olefin polymers** with
 vanadium or chromium complex catalysts)

IT 175362-04-6P 212751-90-1P 212751-91-2P
 212751-92-3P 212751-93-4P 212751-94-5P
 212751-95-6P 212751-96-7P 212751-97-8P
 212751-98-9P
 (manuf. of .alpha.-**olefin polymers** with
 vanadium or chromium complex catalysts)

IT 592-41-6P, 1-Hexene, preparation 9002-88-4P
 (manuf. of .alpha.-**olefin polymers** with
 vanadium or chromium complex catalysts)

L58 ANSWER 7 OF 9 HCA COPYRIGHT 2002 ACS

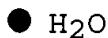
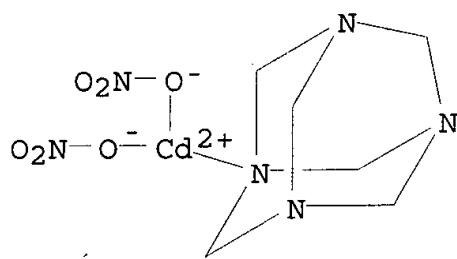
123:186784 Large porous organic and coordination extended solids.
 Venkataraman, Dhandapani; Gardner, Geoffrey; Covey, Aaron;
 Rudalevige, Trevor; Choe, Wonyoung; Wu, Ziyan; Zhang, Jinshan;
 Moore, Jeffrey S.; Lee, Stephen (Macromolecular Research Center,
 University Michigan, Ann Arbor, MI, 48109-1055, USA). Polymer
 Preprints (American Chemical Society, Division of Polymer
 Chemistry), 36(1), 556-7 (English) 1995. CODEN: ACPPAY. ISSN:
 0032-3934. Publisher: American Chemical Society, Division of
 Polymer Chemistry.

AB Stereoviews, along with space groups and crystallog. R1 values, are
 shown of 7 Ag and 1 Cd 1-, 2- and 3-dimensional polymeric complexes.
 The ligands include: 1,4-dicyanobenzene, 1,3,5-tricyanobenzene,
 triazine, pyrazine, hexamethylenetetramine, and 1,4-
 diazabicyclo[2.2.2]octane. No details of the prepn. of the
 complexes are given. Porous org. coordination solids were prep'd.
 using 1,3,5-tris(4-cyanophenylethynyl)benzene and a hexaphenol
 (heptacyclooctatetracontaodecaenehexaynehexol); no details are
 given.

IT 167497-08-7P 167497-12-3P
 (prepn. and partial crystallog. results for porous polymeric)

RN 167497-08-7 HCA

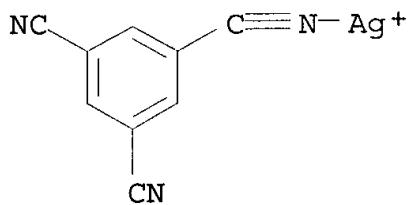
CN Cadmium, bis(nitrato-O) (1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane-
 N1)-, monohydrate (9CI) (CA INDEX NAME)



RN 167497-12-3 HCA
 CN Silver(1+), (1,3,5-benzenetricarbonitrile-N)-, tetrafluoroborate(1-)
 (9CI) (CA INDEX NAME)

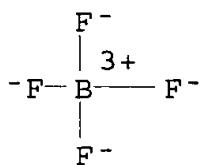
CM 1

CRN 167497-09-8
 CMF C9 H3 Ag N3
 CCI CCS



CM 2

CRN 14874-70-5
 CMF B F4
 CCI CCS



CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s) : 35

IT 167497-01-0P 167497-02-1P 167497-04-3P 167497-07-6P
 167497-08-7P 167497-10-1P 167497-11-2P
 167497-12-3P

(prepn. and partial crystallog. results for porous polymeric)

L58 ANSWER 8 OF 9 HCA COPYRIGHT 2002 ACS

122:147506 Holographic recording material with chemical and environmental stability and manufacture of volume phase-type hologram by using same. Toba, Yasumasa; Yamaguchi, Takeo; Yasuike, Madoka (Toyo Ink Mfg Co, Japan). Jpn. Kokai Tokkyo Koho JP 06175553 A2 19940624 Heisei, 13 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1992-350431 19921203.

AB The title recording material is characterized by a photosensitive film which is made up of (1) a homopolymer of an acrylate or a methacrylate or a vinyl-(meth)acrylate copolymer, (2) a compd. contg. .gtoreq.1 ethylenic unsatd. bond, (3) a merocyanine dye, and (4) a diaryliodonium org. B complex, and is interposed between an optically transparent substrate and an optically transparent protective film. The title manuf. comprises the steps of (a) exposing a holog. recording material with an interference pattern, (b) swelling the material with a solvent, and (c) contacting the material with a solvent with poor swelling and dissolving abilities.

IT 132838-87-0 133972-99-3 160767-84-0

(holog. recording material)

RN 132838-87-0 HCA

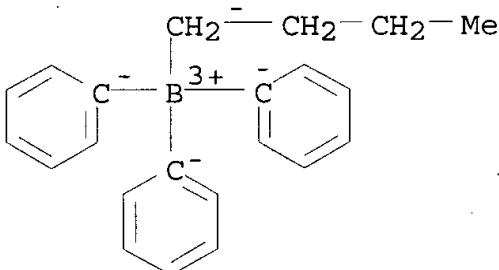
CN Iodonium, diphenyl-, (T-4)-butyltriphenylborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 47252-39-1

CMF C22 H24 B

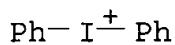
CCI CCS



CM 2

CRN 10182-84-0

CMF C12 H10 I



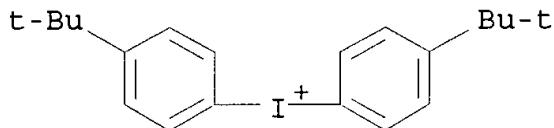
RN 133972-99-3 HCA

CN Iodonium, bis[4-(1,1-dimethylethyl)phenyl]-, (T-4)-butyltriphenylborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 61267-44-5

CMF C20 H26 I

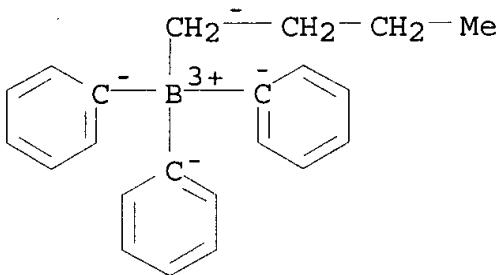


CM 2

CRN 47252-39-1

CMF C22 H24 B

CCI CCS



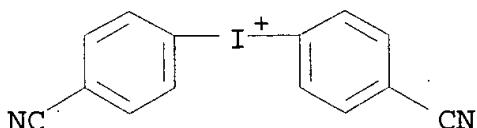
RN 160767-84-0 HCA

CN Iodonium, bis(4-cyanophenyl)-, (T-4)-(1-methylpropyl)triphenylborate(1-) (9CI) (CA INDEX NAME)

CM 1

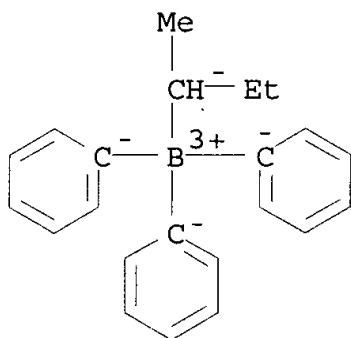
CRN 160767-83-9

CMF C14 H8 I N2



CM 2

CRN 135539-45-6
 CMF C22 H24 B
 CCI CCS



IT 160508-12-3P

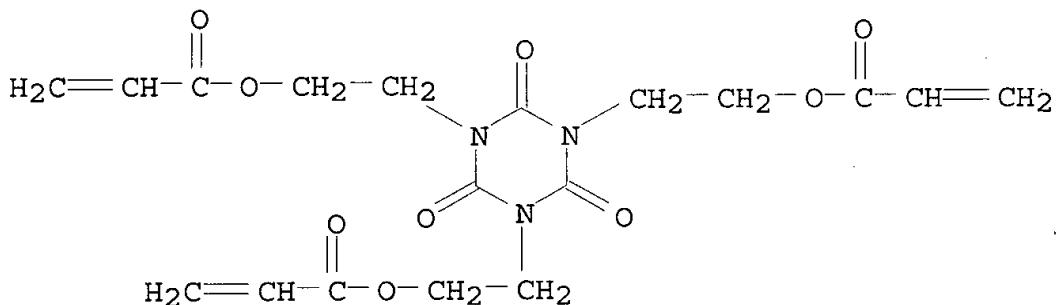
(holog. recording material)

RN 160508-12-3 HCA

CN Ferrocene, [(2-methyl-1-oxo-2-propenyl)oxy]methyl-, polymer with (2,4,6-trioxo-1,3,5-triazine-1,3,5(2H,4H,6H)-triyl)tri-2,1-ethanediyl tri-2-propenoate (9CI) (CA INDEX NAME)

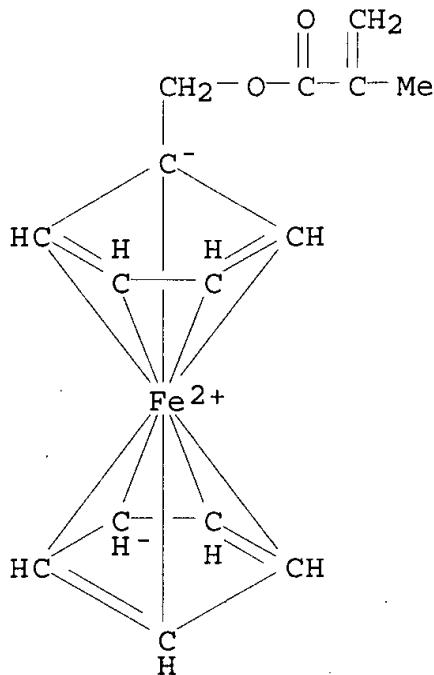
CM 1

CRN 40220-08-4
 CMF C18 H21 N3 O9



CM 2

CRN 31566-61-7
 CMF C15 H16 Fe O2



IC ICM G03H001-02
 ICS G03C009-08; G03F007-004; G03F007-027; G03F007-028; G03F007-033;
 G03F007-11; G03F007-26

CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)

Section cross-reference(s) : 38

IT 2642-26-4 2785-02-6 3568-36-3 14207-70-6 20185-07-3
 23350-56-3 25962-05-4 33686-95-2 64696-72-6 73359-84-9
132838-87-0 133972-99-3 159655-42-2
159655-43-3 160767-84-0

(holog. recording material)

IT 132612-48-7P 160508-11-2P **160508-12-3P** 160508-13-4P
 160508-14-5P 160508-15-6P
 (holog. recording material)

L58 ANSWER 9 OF 9 HCA COPYRIGHT 2002 ACS

122:119155 Holographic recording material and manufacture of volume
 phase-type hologram by using same. Yamaguchi, Takeo; Toba,
 Yasumasa; Yasuiko, Madoka (Toyo Ink Mfg Co, Japan). Jpn. Kokai
 Tokkyo Koho JP 06175559 A2 19940624 Heisei, 12 pp. (Japanese).
 CODEN: JKXXAF. APPLICATION: JP 1992-350437 19921203.

AB The title holog. recording material is characterized by a
 photosensitive film interposed between an optically transparent
 substrate and an optically transparent protective film, wherein the
 photosensitive film comprises (1) an acrylate or a methacrylate
 homopolymer or a copolymer made up of a vinyl monomer and an
 acrylate or a methacrylate, (2) a compd. contg. .gtoreq.1
polymerizable ethylenic unsatd. bond, (3) a

3-ketocoumarin, and (4) a diaryliodonium B complex. The title manuf. comprises the steps of (a) exposing the recording material with an interference pattern, (b) removing the unpolymerd. material and swelling the recording material with a solvent, and (c) contacting the recording material with a poor solvent in sol. and swelling abilities.

IT 132838-87-0 133972-99-3 160508-12-3

160767-84-0

(manuf. of vol. phase-type holog. recording material)

RN 132838-87-0 HCA

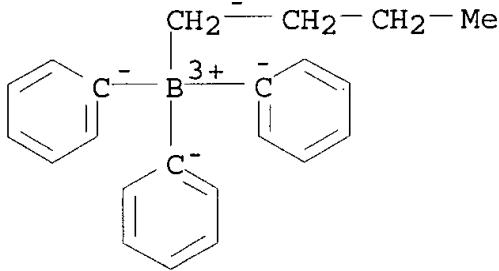
CN Iodonium, diphenyl-, (T-4)-butyltriphenylborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 47252-39-1

CMF C22 H24 B

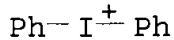
CCI CCS



CM 2

CRN 10182-84-0

CMF C12 H10 I



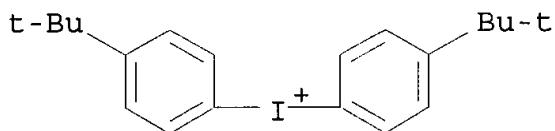
RN 133972-99-3 HCA

CN Iodonium, bis[4-(1,1-dimethylethyl)phenyl]-, (T-4)-butyltriphenylborate(1-) (9CI) (CA INDEX NAME)

CM 1

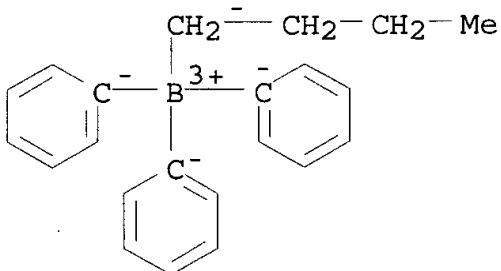
CRN 61267-44-5

CMF C20 H26 I



CM 2

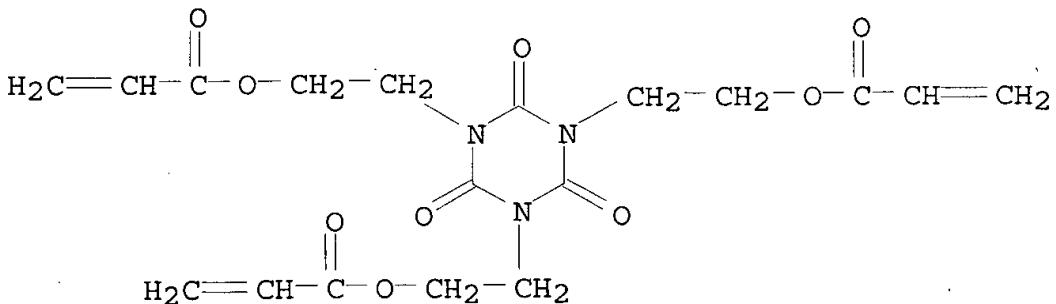
CRN 47252-39-1
 CMF C22 H24 B
 CCI CCS



RN 160508-12-3 HCA
 CN Ferrocene, [(2-methyl-1-oxo-2-propenyl)oxy]methyl-, polymer with (2,4,6-trioxo-1,3,5-triazine-1,3,5(2H,4H,6H)-triyl)tri-2,1-ethanediyl tri-2-propenoate (9CI) (CA INDEX NAME)

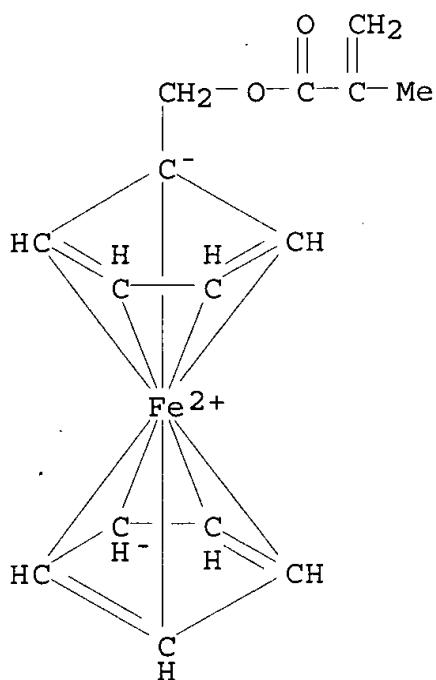
CM 1

CRN 40220-08-4
 CMF C18 H21 N3 O9



CM 2

CRN 31566-61-7
 CMF C15 H16 Fe O2



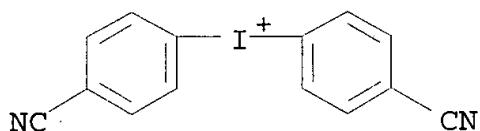
RN 160767-84-0 HCA

CN Iodonium, bis(4-cyanophenyl)-, (T-4)-(1-methylpropyl)triphenylborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 160767-83-9

CMF C14 H8 I N2

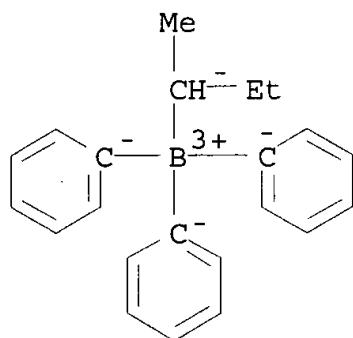


CM 2

CRN 135539-45-6

CMF C22 H24 B

CCI CCS



IC ICM G03H001-02
 ICS G03C009-08; G03F007-004; G03F007-027; G03F007-028; G03F007-033;
 G03F007-11; G03F007-26
 CC 74-10 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 Section cross-reference(s): 38
 IT 63226-13-1 77016-74-1 77016-75-2 77819-83-1 106618-32-0
 132612-48-7 132838-87-0 133972-99-3
 143150-66-7 143150-67-8 153049-69-5 160508-11-2
 160508-12-3 160508-13-4 160508-14-5 160508-15-6
 160767-84-0
 (manuf. of vol. phase-type holog. recording material)

=> d 159 1-4 ti

L59 ANSWER 1 OF 4 HCA COPYRIGHT 2002 ACS
 TI The Chemistry of 1,3,5-Triazacyclohexane Complexes. 7. Synthesis and
 Characterization of the Cobalt(II) Methoxide Core $\{\text{Co}_3(\text{OMe})_4\}^{2+}$
 L59 ANSWER 2 OF 4 HCA COPYRIGHT 2002 ACS
 TI The chemistry of 1,3,5-triazacyclohexane complexes. Part 4. Strained
 1,3,5-triazacyclohexane complexes of copper(I) and copper(II)
 L59 ANSWER 3 OF 4 HCA COPYRIGHT 2002 ACS
 TI The chemistry of 1,3,5-triazacyclohexane complexes. 5. Cationic
 zinc(II) alkyl complexes of N-alkylated 1,3,5-triazacyclohexanes and
 13-benzyl-1,5,9-triazatricyclo[7.3.1.05,13]tridecane
 L59 ANSWER 4 OF 4 HCA COPYRIGHT 2002 ACS
 TI Electron-deficient Group IV metal alkyl cations, and the synthesis
 of $\text{Zr}(\text{CH}_2\text{Ph})_3(\text{.eta.6-C}_6\text{H}_5)\text{BPh}_3$: a fluxional arene .pi.-complex of a
 d0 metal

=> d 159 1,2,3 cbib abs hitstr hitind

L59 ANSWER 1 OF 4 HCA COPYRIGHT 2002 ACS

127:354654 The Chemistry of 1,3,5-Triazacyclohexane Complexes. 7. Synthesis and Characterization of the Cobalt(II) Methoxide Core $\{\text{Co}_3(\text{OMe})_4\}^{2+}$. Koehn, Randolph D.; Haufe, Matthias; Kociok-Koehn, Gabriele; Filippou, Alexander C. (Institut fuer Anorganische und Analytische Chemie, Technische Universitaet Berlin, Berlin, D-10623, Germany). Inorganic Chemistry, 36(26), 6064-6069 (English) 1997. CODEN: INOCAJ. ISSN: 0020-1669. Publisher: American Chemical Society.

AB The authors report the synthesis and characterization of the 1st .eta.3-1,3,5-trimethyl-1,3,5-triazacyclohexane (Me3TAC) alkoxo complexes. Dehydration of $[\text{Co}(\text{H}_2\text{O})_6]^{(\text{X})_2}$ with 2,2-dimethoxypropane or $\text{HC}(\text{OMe})_3$ and subsequent treatment with Me3TAC gave the methoxo cube fragment clusters $\{(\text{Me3TAC})\text{Co}\}_3(\text{OMe})_4\}^{(\text{X})_2}$ ($\text{X} = \text{B}(\text{C}_6\text{F}_5)_4$ (2a) and $\text{B}(\text{m-C}_6\text{H}_3(\text{CF}_3)_2)_4$ (2b)). 2a crystallizes as a solvate in the triclinic space group P.hivin.1 ($a = 13.857(2)$, $b = 16.843(3)$, $c = 19.318(2)$.ANG., $\alpha = 79.23(2)$, $\beta = 76.855(13)$, $\gamma = 70.10(2)$.degree., $Z = 2$) and solvated 2b in the monoclinic space group P21 ($a = 12.710(3)$, $b = 23.251(3)$, $c = 18.702(4)$.ANG., $\beta = 101.16(2)$.degree., $Z = 2$). The cations contain a $\{\text{Co}_3(\text{OMe})_4\}$ cube fragment core with an .eta.3-Me3TAC bonded to each Co atom. Me3TAC is bonded unsym. due to H-bonding interactions with the anions. This broken symmetry can also be obsd. as solvent-, anion-, and H/D-isotope-dependent splitting of the signals in 1H and 2H NMR. A byproduct of the reaction is the protonated Me3TAC. The analogous monoacid adduct Me3TAC.cntdot.HCl was characterized by x-ray crystallog. (orthorhombic space group Pbca, $a = 11.0366(9)$, $b = 12.2986(6)$, $c = 13.9949(7)$.ANG., $Z = 8$).

IT 198197-24-9P 198197-26-1P

(for prep. of cobalt trimethyltriazacyclohexane methoxo partial cubane)

RN 198197-24-9 HCA

CN Cobalt(2+), hexaaqua-, (OC-6-11)-, bis[tetrakis(pentafluorophenyl)borate(1-)], compd. with 1,1'-oxybis[ethane] (1:2) (9CI) (CA INDEX NAME)

CM 1

CRN 60-29-7

CMF C4 H10 O

$\text{H}_3\text{C}-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_3$

CM 2

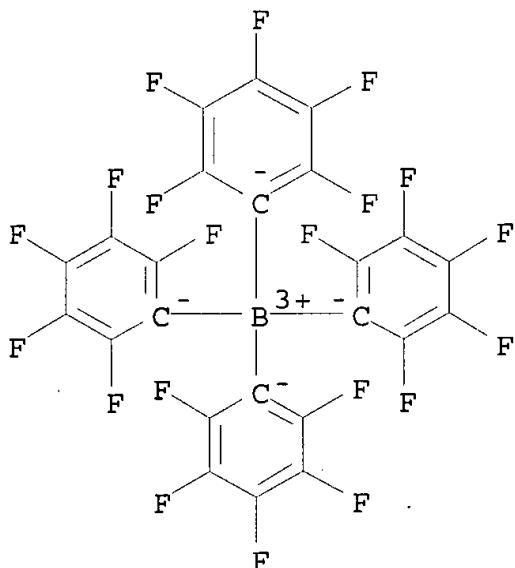
CRN 198197-23-8

CMF C24 B F20 . 1/2 Co H12 O6

CM 3

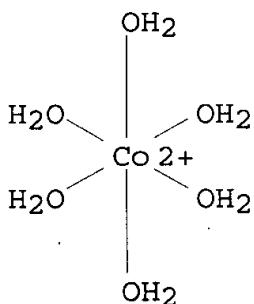
CRN 47855-94-7

CMF C24 B F20
 CCI CCS



CM 4

CRN 15276-47-8
 CMF Co H12 O6
 CCI CCS



RN 198197-26-1 HCA
 CN Cobalt(2+), hexaaqua-, (OC-6-11)-, bis[tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-)], compd. with 1,1'-oxybis[ethane] (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 60-29-7
 CMF C4 H10 O

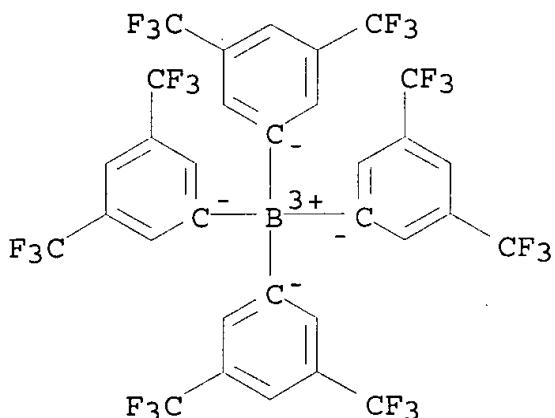
H₃C—CH₂—O—CH₂—CH₃

CM 2

CRN 198197-25-0
CMF C32 H12 B F24 . 1/2 Co H12 O6

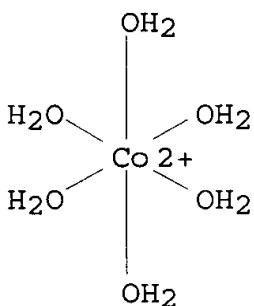
CM 3

CRN 79230-20-9
CMF C32 H12 B F24
CCI CCS



CM 4

CRN 15276-47-8
CMF Co H12 O6
CCI CCS



IT 198197-29-4P 198197-33-0P

(prepn. and crystal structure and hydrogen bonding of)

RN 198197-29-4 HCA

CN Cobalt (2+), tris(hexahydro-1,3,5-trimethyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)tri-.mu.-methoxy-.mu.3-methoxytri-, bis[tetrakis(pentafluorophenyl)borate(1-)], compd. with dichloromethane (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 75-09-2

CMF C H2 Cl2

Cl—CH₂—Cl

CM 2

CRN 198197-28-3

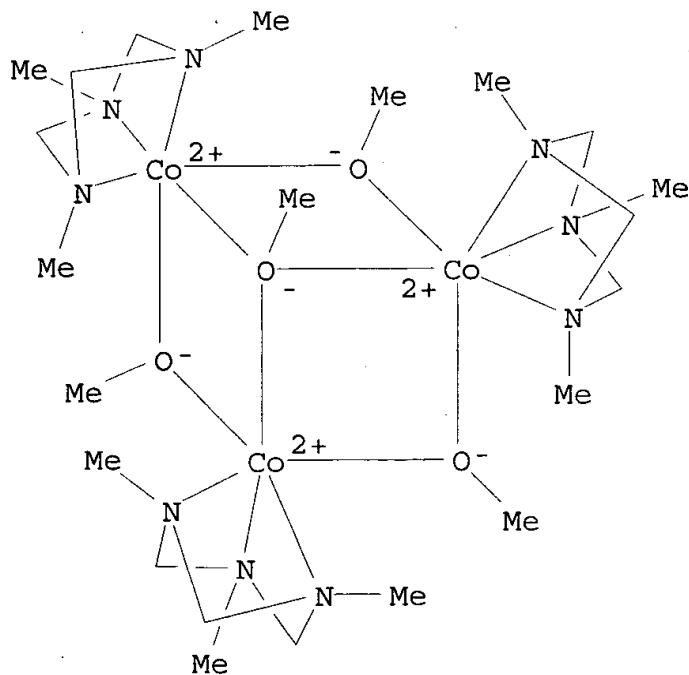
CMF C24 B F20 . 1/2 C22 H57 Co3 N9 O4

CM 3

CRN 198197-27-2

CMF C22 H57 Co3 N9 O4

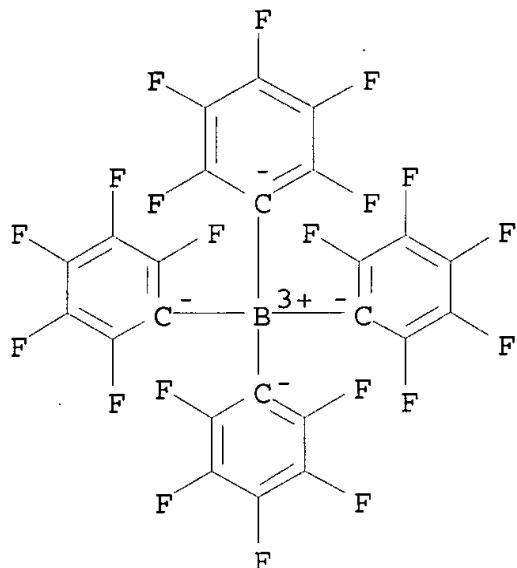
CCI CCS



CM 4

CRN 47855-94-7

CMF C24 B F20
 CCI CCS



RN 198197-33-0 HCA
 CN Cobalt(2+), tris(hexahydro-1,3,5-trimethyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)tri-.mu.-methoxy-.mu.3-methoxytri-, bis[tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-)], compd. with dichloromethane (1:2) (9CI) (CA INDEX NAME)

CM 1

CRN 75-09-2
 CMF C H2 Cl2

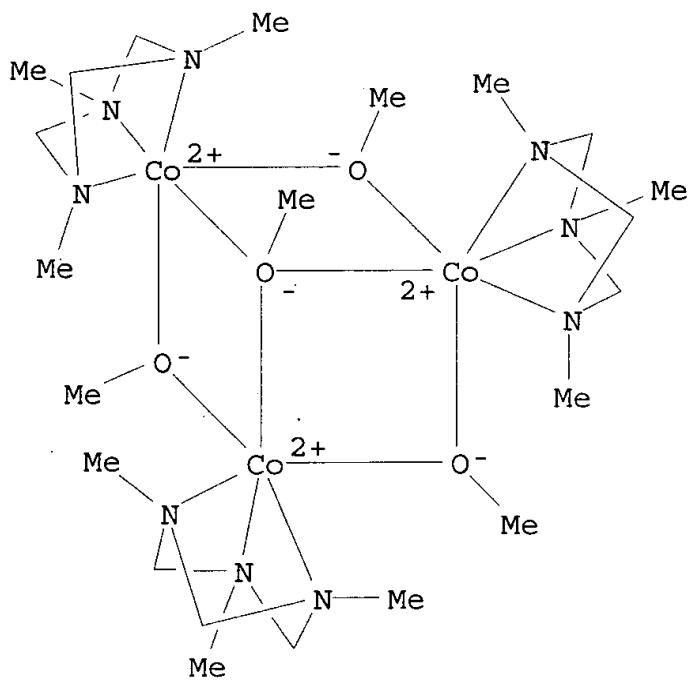
Cl-CH₂-Cl

CM 2

CRN 198197-30-7
 CMF C32 H12 B F24 . 1/2 C22 H57 Co3 N9 O4

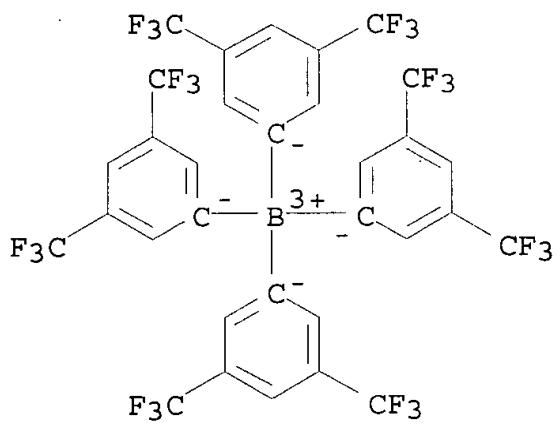
CM 3

CRN 198197-27-2
 CMF C22 H57 Co3 N9 O4
 CCI CCS



CM 4

CRN 79230-20-9
CMF C32 H12 B F24
CCI CCS



IT 198197-30-7P

(prepn. and mol. structure and hydrogen bonding of)

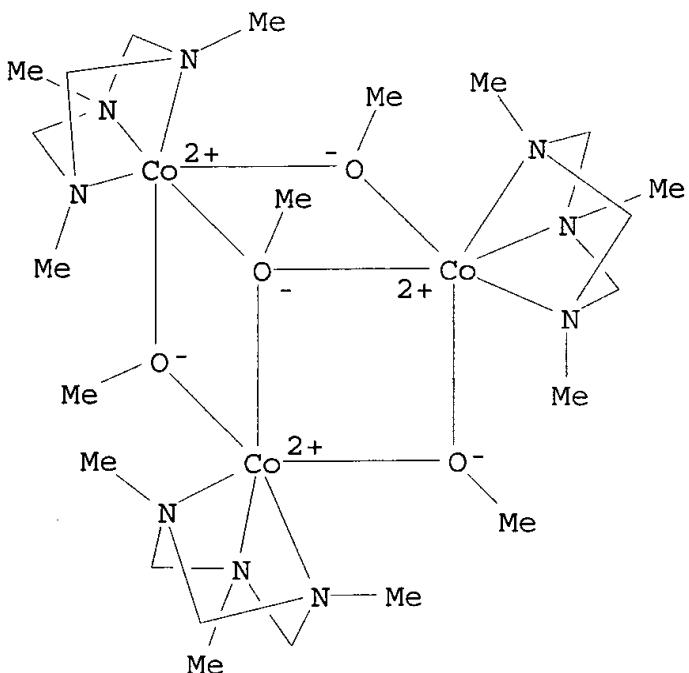
RN 198197-30-7 HCA

CN Cobalt (2+), tris(hexahydro-1,3,5-trimethyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)tri-.mu.-methoxy-.mu.3-methoxytri-, bis[tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-)] (9CI) (CA)

INDEX NAME)

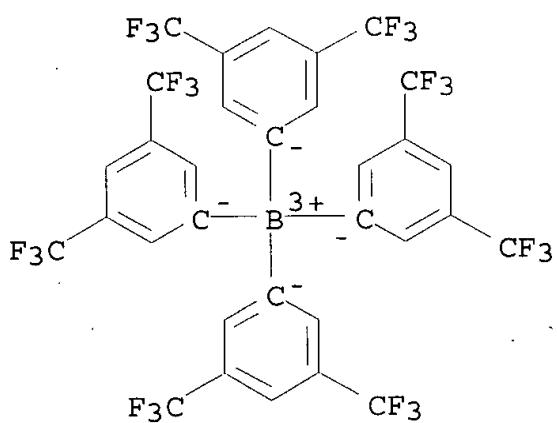
CM 1

CRN 198197-27-2
 CMF C22 H57 Co3 N9 O4
 CCI CCS



CM 2

CRN 79230-20-9
 CMF C32 H12 B F24
 CCI CCS

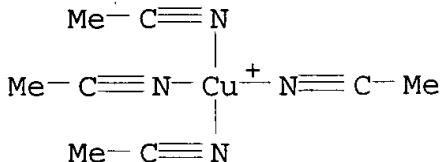


CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 75
 IT 198197-24-9P 198197-26-1P
 (for prepn. of cobalt trimethyltriazacyclohexane methoxo partial
 cubane)
 IT 198197-29-4P 198197-33-0P
 (prepn. and crystal structure and hydrogen bonding of)
 IT 198197-30-7P
 (prepn._and_mol._structure_and_hydrogen_bonding_of)-----

L59 ANSWER 2 OF 4 HCA COPYRIGHT 2002 ACS
 126:54086 The chemistry of 1,3,5-triazacyclohexane complexes. Part 4.
 Strained 1,3,5-triazacyclohexane complexes of copper(I) and
 copper(II). Koehn, Randolph Dag; Seifert, Guido; Kociok-Koehn,
 Gabriele (Inst. Anorganische Analytische Chem., Tech. Univ. Berlin,
 Berlin, D-10623, Germany). Chemische Berichte, 129(11), 1327-1333
 (English) 1996. CODEN: CHBEAM. ISSN: 0009-2940. Publisher: VCH.
 AB Synthesis and crystallog. characterization of 1,3,5-substituted
 .eta.3-1,3,5-triazacyclohexane (R3TAC) complexes of Cu(I) and Cu(II)
 is reported. $\{[(Me_3TAC)CuCl_2]_2\}$, $\{[(iPr_3TAC)CuCl_2]\}$ (I),
 $\{[(PhCH_2)_3TAC]Cu(PPh_3)\}BF_4$, and $\{[(iPr_3TAC)Cu(PPh_3)]BF_4\}$ were
 characterized by x-ray crystallog. The highly strained and bent
 Cu-N bonds are longer than in the corresponding complexes of other
 amine ligands. One methylene C atom of the ring comes close to the
 Cu atom (2.55-2.65 .ANG.). Investigation of the ring deuterated
 complexes by IR and x-ray crystallog. $\{[D_6]-I\}$ gave no evidence for
 attractive C-H-Cu interactions.
 IT 15418-29-8, Tetrakis(acetonitrile)copper(1+)
 tetrafluoroborate
 (for prepn. of copper triazacyclohexane complexes)
 RN 15418-29-8 HCA
 CN Copper(1+), tetrakis(acetonitrile)-, (T-4)-, tetrafluoroborate(1-)
 (9CI) (CA INDEX NAME)

CM 1

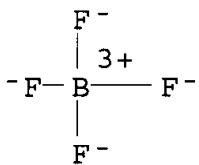
CRN 16685-09-9
 CMF C8 H12 Cu N4
 CCI CCS



CM 2

CRN 14874-70-5

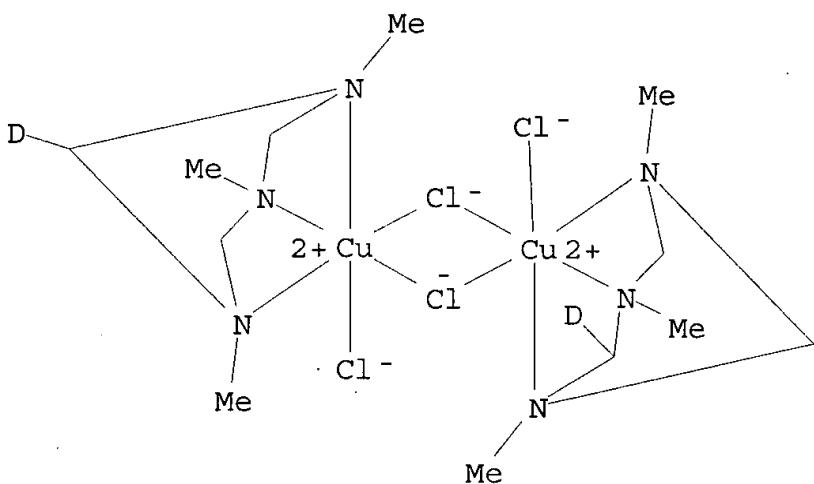
CMF B F4
CCI CCS



IT 184866-87-3P

(for prepn. of copper triazacyclohexane complexes)

RN 184866-87-3 HCA

CN Copper, di-.mu.-chlorodichlorobis(octahydro-1,4,7-trimethyl-1H-1,4,7-triaazonine-2-d-.kappa.N1,.kappa.N4,.kappa.N7)di-, stereoisomer (9CI)
(CA INDEX NAME)IT 183617-31-4P 183617-43-8P 183617-45-0P
183617-46-1P 183815-12-5P

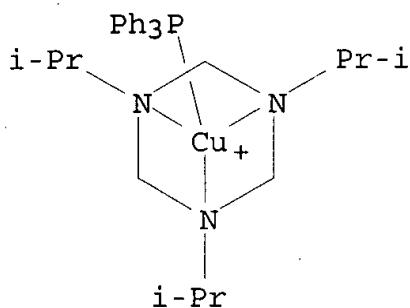
(prepn. and crystal structure of)

RN 183617-31-4 HCA

CN Copper(1+), [hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5](triphenylphosphine)-, (T-4)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 183617-30-3
CMF C30 H42 Cu N3 P
CCI CCS

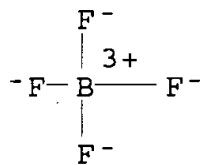


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



RN 183617-43-8 HCA

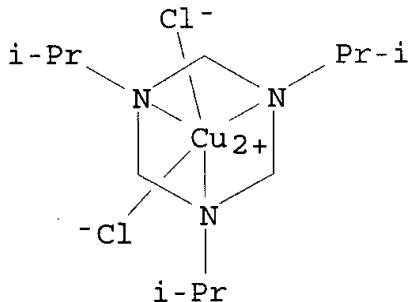
CN Copper, dichloro[hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (SP-5-22)-, compd. with trichloromethane (1:1) (9CI) (CA INDEX NAME)

CM 1

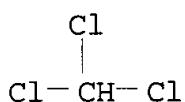
CRN 183617-26-7

CMF C12 H27 Cl2 Cu N3

CCI CCS

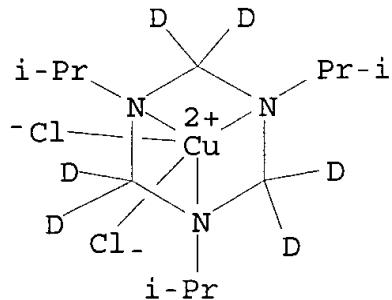


CM 2

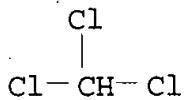
CRN 67-66-3
CMF C H Cl3

RN 183617-45-0 HCA
 CN Copper, dichloro[hexahydro-2,4,6-d3-1,3,5-tris(1-methylethyl)-1,3,5-triazine-2,4,6-d3-.kappa.N1,.kappa.N3,.kappa.N5]-, (SP-5-22)-, compd. with trichloromethane (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 183617-34-7
CMF C12 H21 Cl2 Cu D6 N3
CCI CCS

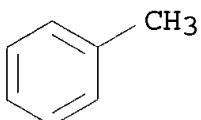
CM 2

CRN 67-66-3
CMF C H Cl3

RN 183617-46-1 HCA
 CN Copper(1+), (octahydro-1,4,7-trimethyl-1H-1,4,7-triazonine-.kappa.N1,.kappa.N4,.kappa.N7)(triphenylphosphine)-, (T-4)-, tetrafluoroborate(1-), compd. with methylbenzene (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 108-88-3
CMF C7 H8

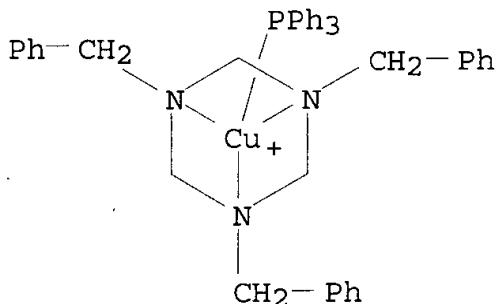


CM 2

CRN 183617-29-0
CMF C42 H42 Cu N3 P . B F4

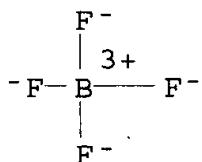
CM 3

CRN 183617-28-9
CMF C42 H42 Cu N3 P
CCI CCS



CM 4

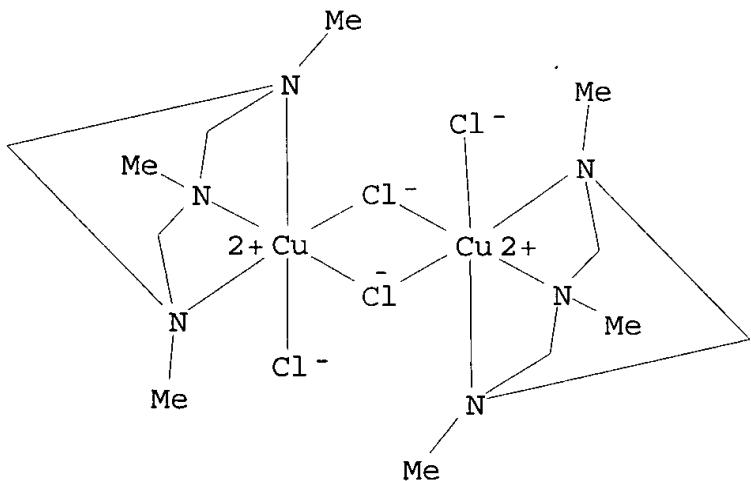
CRN 14874-70-5
CMF B F4
CCI CCS



RN 183815-12-5 HCA
CN Copper, di-.mu.-chlorodichlorobis(hexahydro-1,3,5-trimethyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)di-, stereoisomer, compd. with 1,3,5-trioxane (3:1), monohydrate (9CI) (CA INDEX NAME)

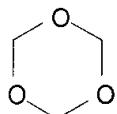
CM 1

CRN 183617-25-6
 CMF C12 H30 Cl4 Cu2 N6
 CCI CCS



CM 2

CRN 110-88-3
 CMF C3 H6 O3

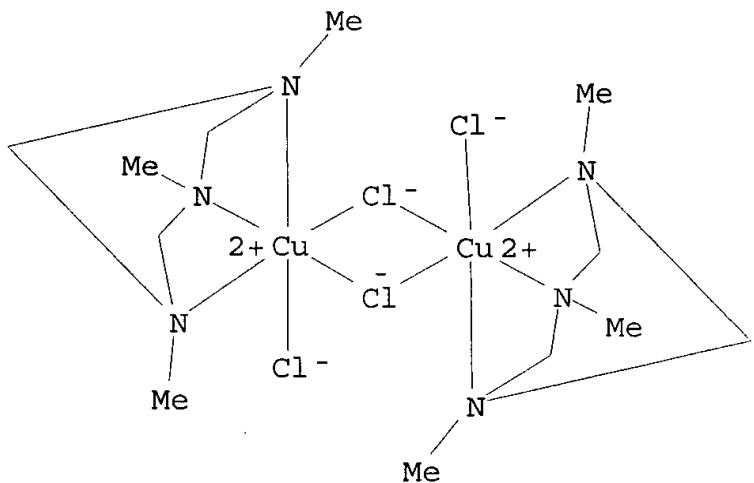


IT 183617-25-6P 183617-26-7P 183617-29-0P
 183617-34-7P

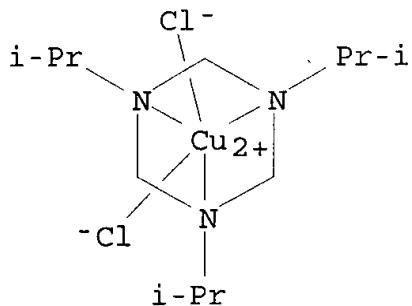
(prepn. and mol. structure)

RN 183617-25-6 HCA

CN Copper, di-.mu.-chlorodichlorobis(octahydro-1,4,7-trimethyl-1H-1,4,7-triaazonine-.kappa.N1,.kappa.N4,.kappa.N7)di-, stereoisomer (9CI)
 (CA INDEX NAME)



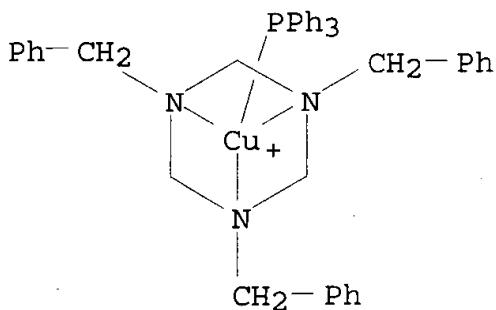
RN 183617-26-7 HCA
 CN Copper, dichloro [hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (SP-5-22)- (9CI) (CA INDEX NAME)



RN 183617-29-0 HCA
 CN Copper(1+), [hexahydro-1,3,5-tris(phenylmethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5](triphenylphosphine)-, (T-4)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 183617-28-9
 CMF C42 H42 Cu N3 P
 CCI CCS

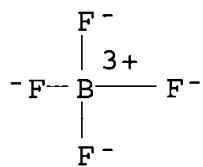


CM 2

CRN 14874-70-5

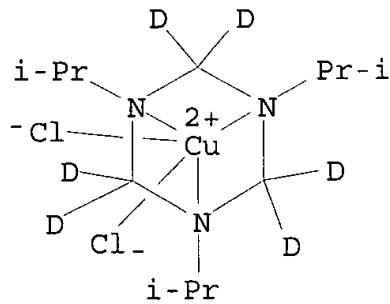
CMF B F4

CCI CCS



RN 183617-34-7 HCA

CN Copper, dichloro[[hexahydro-2,4,6-d3-1,3,5-tris(1-methylethyl)-1,3,5-triazine-2,4,6-d3].kappa.N1,.kappa.N3,.kappa.N5]-, (SP-5-22)- (9CI) (CA INDEX NAME)



IT 183617-33-6P 183617-38-1P 183817-57-4P

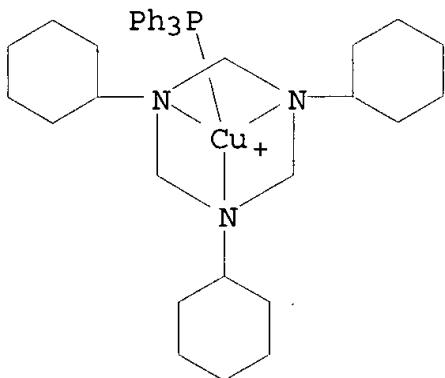
(prepn. of copper triazacyclohexane complexes)

RN 183617-33-6 HCA

CN Copper(1+), (1,3,5-tricyclohexylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)(triphenylphosphine)-, (T-4)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

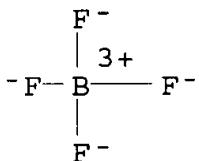
CM 1

CRN 183617-32-5
 CMF C39 H54 Cu N3 P
 CCI CCS



CM 2

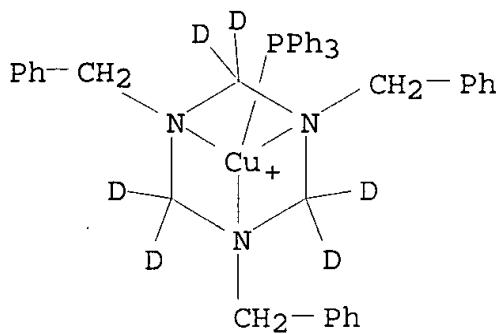
CRN 14874-70-5
 CMF B F4
 CCI CCS



RN 183617-38-1 HCA
 CN Copper(1+), [hexahydro-2,4,6-d3-1,3,5-tris(phenylmethyl)-1,3,5-triazine-2,4,6-d3-.kappa.N1,.kappa.N3,.kappa.N5] (triphenylphosphine)-, (T-4)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

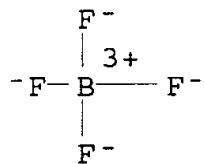
CM 1

CRN 183617-37-0
 CMF C42 H36 Cu D6 N3 P
 CCI CCS

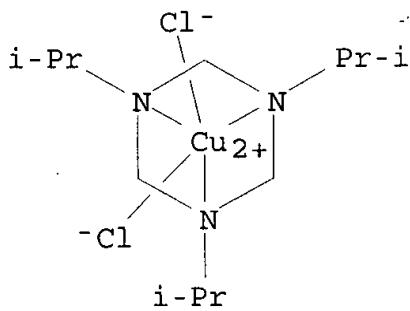


CM 2

CRN 14874-70-5
 CMF B F4
 CCI CCS



RN 183817-57-4 HCA
 CN Copper, dichloro[hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, labeled with deuterium (9CI) (CA INDEX NAME)



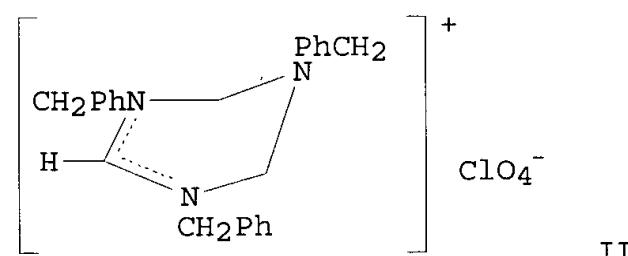
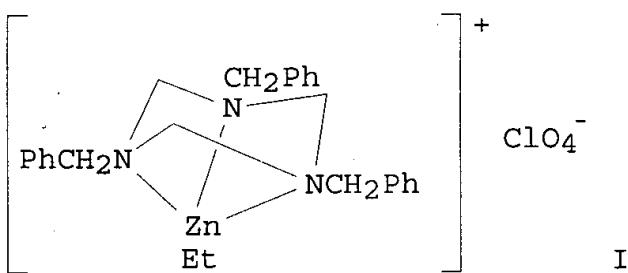
CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 28, 75
 IT 75-31-0, Isopropyl amine, reactions 100-46-9, Benzyl amine, reactions 108-74-7, 1,3,5-Triethyl-1,3,5-triazacyclohexane 2547-66-2, 1,3,5-Tribenzyl-1,3,5-triazacyclohexane 6281-14-7, 1,3,5-Tricyclohexyl-1,3,5-triazacyclohexane 10556-98-6,

1,3,5-Triisopropyl-1,3,5-triazacyclohexane 15418-29-8,
 Tetrakis(acetonitrile)copper(1+) tetrafluoroborate 43094-80-0,
 Paraformaldehyde-d2
 (for prepn. of copper triazacyclohexane complexes)
 IT 184866-87-3P
 (for prepn. of copper triazacyclohexane complexes)
 IT 183617-31-4P 183617-43-8P 183617-45-0P
 183617-46-1P 183815-12-5P
 (prepn. and crystal structure of)
 IT 183617-25-6P 183617-26-7P 183617-29-0P
 183617-34-7P
 (prepn. and mol. structure)
 IT 183617-33-6P 183617-38-1P 183817-57-4P
 (prepn. of copper triazacyclohexane complexes)

L59 ANSWER 3 OF 4 HCA COPYRIGHT 2002 ACS

125:276048 The chemistry of 1,3,5-triazacyclohexane complexes. 5.
 Cationic zinc(II) alkyl complexes of N-alkylated
 1,3,5-triazacyclohexanes and 13-benzyl-1,5,9-
 triazatricyclo[7.3.1.05,13]tridecane. Haufe, Matthias; Koehn,
 Randolph D.; Wiemann, Roman; Seifert, Guido; Zeigan, Dieter (Institut
 Fuer Anorganische und Analytische Chemie, Technische Universitaet
 Berlin, Berlin, D-10623, Germany). Journal of Organometallic
 Chemistry, 520(1-2), 121-129 (English) 1996. CODEN: JORCAI. ISSN:
 0022-328X. Publisher: Elsevier.

GI



AB Diethylzinc reacts with hydroperchlorates of N-alkylated

1,3,5-triazacyclohexanes (R3TAC; R = Me, PhCH₂, iPr) and with the hydrotetrafluoroborate of 1,3,5-tris(p-fluorobenzyl)-1,3,5-triazacyclohexane (FBz₃TAC) to give the corresponding cationic Zn complexes [(R₃TAC)Zn(Et)] [X] (X = ClO₄⁻, BF₄⁻), e.g., I. Similar complexes were obtained from diethylzinc treated with [HNMe₂Ph] [BF₄] or [HNMe₂Ph] [B(C₆F₅)₄] (Et₂O) in the presence of R₄TAC (R = PhCH₂, p-FC₆H₄CH₂, S-PhMeCH). The crystal structure of II, a product of the decompn. of I, was detd. The structures of [[(S-PhMeCH)3TAC]Zn(ET)] [BF₄] and [[(p-FC₆H₄CH₂)3TAC]Zn(Et)] [BF₄] were estd. using nuclear Overhauser enhancement spectroscopy. Protonolysis of diethylzinc with [HNMe₂Ph] [BF₄] in the presence of 13-benzyl-1,5,9-triazatricyclo[7.3.1.05,13]tridecane (BzTATC) yield [(BzTATC)Zn(Et)] [BF₄].

IT 118612-00-3P

(prepn. of)

RN 118612-00-3 HCA

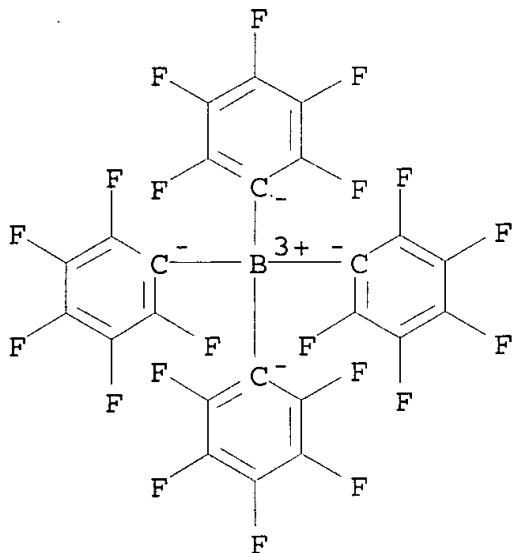
CN Borate(1-), tetrakis(pentafluorophenyl)-, hydrogen, compd. with N,N-dimethylbenzenamine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 118611-98-6

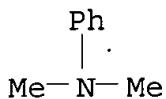
CMF C24 B F20 . H

CCI CCS

● H⁺

CM 2

CRN 121-69-7
 CMF C8 H11 N

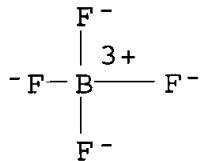


IT 22533-76-2P 182175-60-6P 182175-65-1P
 (prepn. of cationic zinc(II) alkyl complexes of N-alkylated triazacyclohexanes and benzyltriazatricyclotridecane)

RN 22533-76-2 HCA
 CN Benzenamine, N,N-dimethyl-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

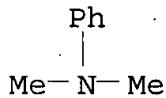
CRN 16872-11-0
 CMF B F4 . H
 CCI CCS



H⁺

CM 2

CRN 121-69-7
 CMF C8 H11 N

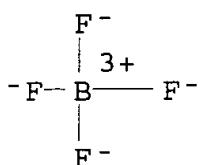


RN 182175-60-6 HCA
 CN 1,3,5-Triazine, 1,3,5-tris[(4-fluorophenyl)methyl]hexahydro-, mono[tetrafluoroborate(1-)] (9CI) (CA INDEX NAME)

CM 1

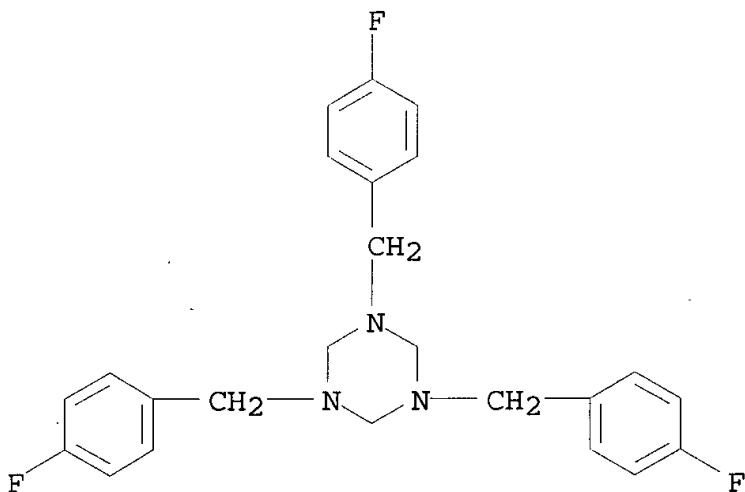
CRN 16872-11-0
 CMF B F4 . H

CCI CCS

 H^+

CM 2

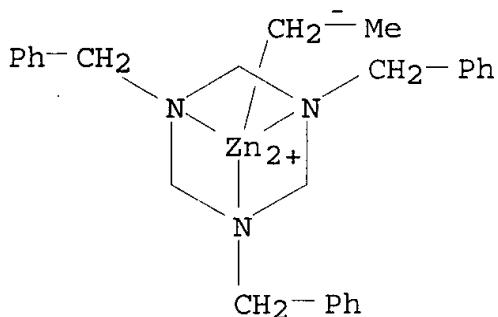
CRN 4520-86-9
 CMF C24 H24 F3 N3



RN 182175-65-1 HCA
 CN Zinc(1+), ethyl [hexahydro-1,3;5-tris(phenylmethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (T-4)-, perchlorate (9CI) (CA INDEX NAME)

CM 1

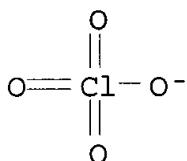
CRN 182175-64-0
 CMF C26 H32 N3 Zn
 CCI CCS



CM 2

CRN 14797-73-0

CMF Cl O4

IT 182175-68-4P 182175-70-8P 182175-71-9P
182175-72-0P 182175-75-3P 182175-77-5P

(prepn. of cationic zinc(II) alkyl complexes of N-alkylated triazacyclohexanes and benzyltriazatricyclotridecane)

RN 182175-68-4 HCA

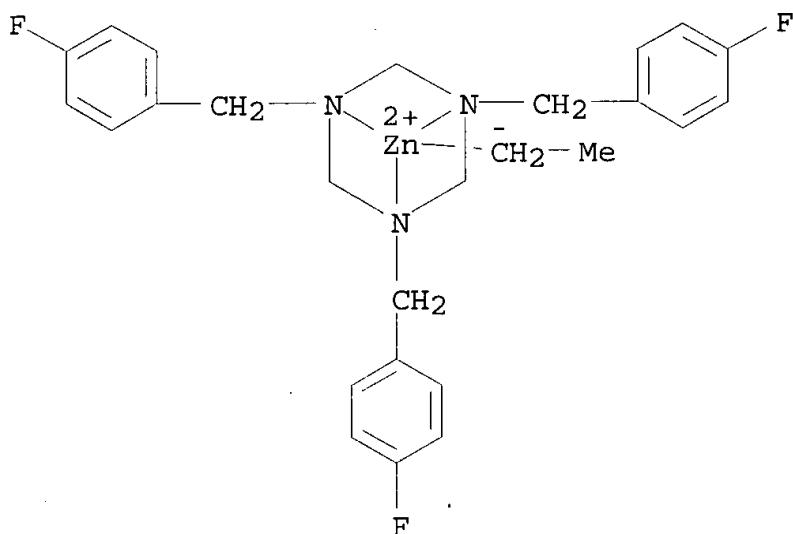
CN Zinc(1+), ethyl[1,3,5-tris[(4-fluorophenyl)methyl]hexahydro-1,3,5-triazine-N1,N3,N5]-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 182175-67-3

CMF C26 H29 F3 N3 Zn

CCI CCS

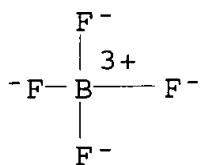


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



RN 182175-70-8 HCA

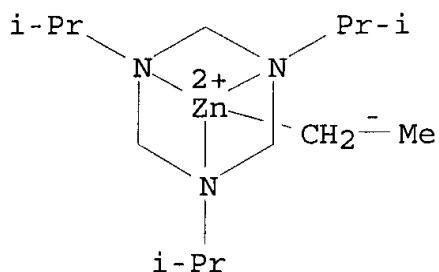
CN Zinc(1+), ethyl [hexahydro-1,3,5-tris(1-methylethyl)-1,3,5-triazine-N1,N3,N5]-, perchlorate (9CI) (CA INDEX NAME)

CM 1

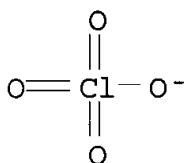
CRN 182175-69-5

CMF C14 H32 N3 Zn

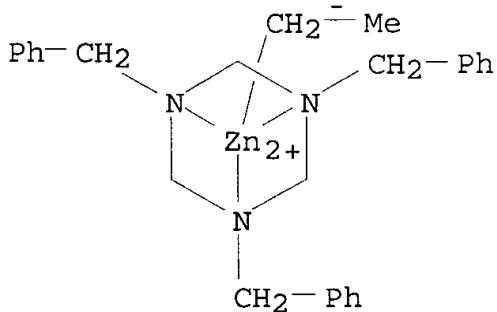
CCI CCS



CM 2

CRN 14797-73-0
CMF Cl O4RN 182175-71-9 HCA
CN Zinc(1+), ethyl [hexahydro-1,3,5-tris(phenylmethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (T-4)-, tetrafluoroborate(1-) (9CI)
(CA INDEX NAME)

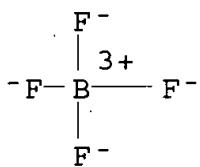
CM 1

CRN 182175-64-0
CMF C26 H32 N3 Zn
CCI CCS

CM 2

CRN 14874-70-5

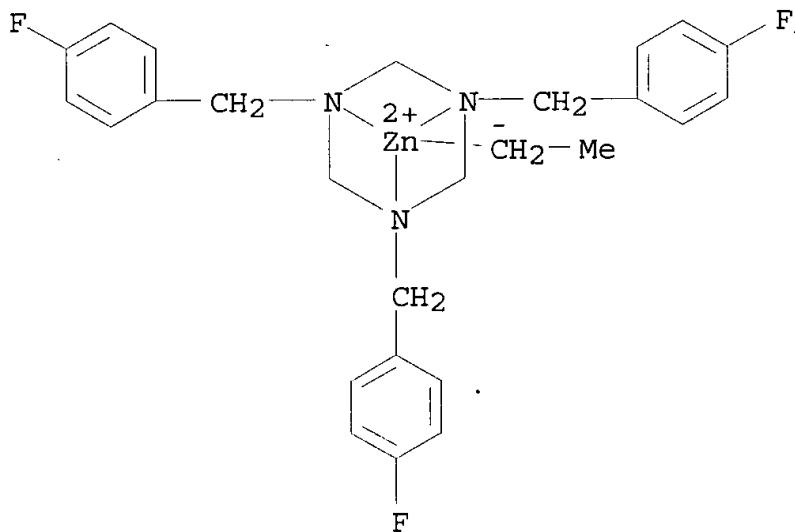
CMF B F4
CCI CCS



RN 182175-72-0 HCA
CN Zinc(1+), ethyl[1,3,5-tris[(4-fluorophenyl)methyl]hexahydro-1,3,5-triazine-N1,N3,N5]-, tetrakis(pentafluorophenyl)borate(1-) (9CI)
(CA INDEX NAME)

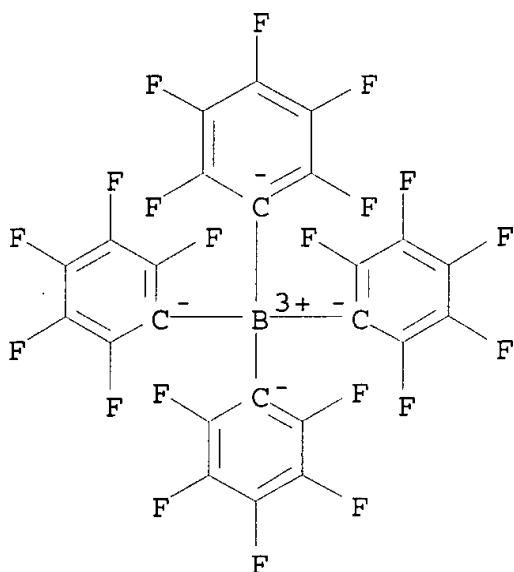
CM 1

CRN 182175-67-3
CMF C26 H29 F3 N3 Zn
CCI CCS



CM 2

CRN 47855-94-7
CMF C24 B F20
CCI CCS



RN 182175-75-3 HCA

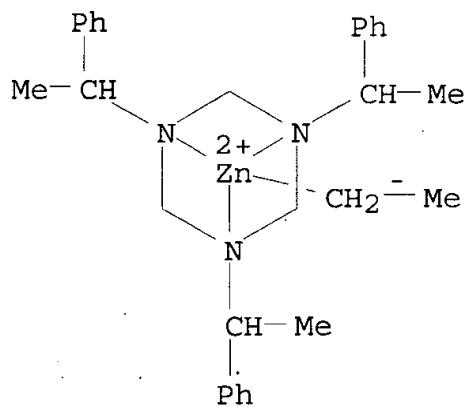
CN Zinc(1+), ethyl [hexahydro-1,3,5-tris(1-phenylethyl)-1,3,5-triazine-N1,N3,N5]-, stereoisomer, perchlorate (9CI) (CA INDEX NAME)

CM 1

CRN 182175-74-2

CMF C29 H38 N3 Zn

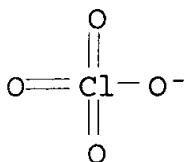
CCI CCS



CM 2

CRN 14797-73-0

CMF Cl O4



RN 182175-77-5 HCA
 CN Zinc(1+), ethyl [hexahydro-9b-(phenylmethyl)-1H,4H,7H,9bH-3a,6a,9a-triazaphenalenene-N3a,N6a,N9a]-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

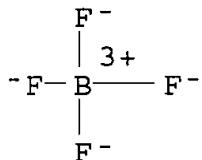
CM 1

CRN 182175-76-4
 CMF C19 H30 N3 Zn
 CCI CCS

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 14874-70-5
 CMF B F4
 CCI CCS



CC 29-9 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 75
 IT 118612-00-3P 182175-58-2P
 (prepn. of)
 IT 22533-76-2P 69737-15-1P 182175-60-6P
 182175-65-1P
 (prepn. of cationic zinc(II) alkyl complexes of N-alkylated triazacyclohexanes and benzyltriazatricyclotridecane)
 IT 182175-68-4P 182175-70-8P 182175-71-9P
 182175-72-0P 182175-75-3P 182175-77-5P
 (prepn. of cationic zinc(II) alkyl complexes of N-alkylated triazacyclohexanes and benzyltriazatricyclotridecane)

=> d 161 1-8 cbib abs hitstr hitind

L61 ANSWER 1 OF 8 HCA COPYRIGHT 2002 ACS
 137:125530 Cationic polymerization catalyst system. Vaughan, George A.
 (ExxonMobil Chemical Patents Inc., USA). PCT Int. Appl. WO

2002059157 A2 20020801, 51 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US47697 20011025.

PRIORITY: US 2000-PV243237 20001025.

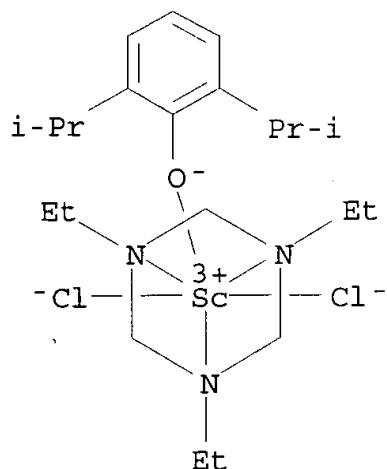
AB A 3+ oxidn. state metal complex for coordination polymn. of **olefins** is disclosed. The precursor metal complex is stabilized by a anionic multidentate ligand and at least two monoanionic ligands. The multidentate ligand and the transition metal form a metallocycle having at least 5 primary atoms, counting any .pi.-bound cyclopentadienyl group in the metallocycle as 2 primary atoms. **Olefin polymn.** is exemplified.

IT **444024-53-7P**

(catalyst; cationic catalyst system)

RN 444024-53-7 HCA

CN Scandium, [2,6-bis(1-methylethyl)phenolato]dichloro(1,3,5-triethylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-33)- (9CI) (CA INDEX NAME)



IT **9002-88-4P, Polyethylene**
(cationic catalyst system)

RN 9002-88-4 HCA

CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1

CMF C2 H4

H₂C=CH₂

IC ICM C08F
 CC 35-3 (Chemistry of Synthetic High Polymers)
 ST olefin cationic coordination complex polymn catalyst
 system
 IT Polyolefins
 (cationic catalyst system)
 IT 332841-16-4P 444024-52-6P 444024-53-7P 444024-54-8P
 (catalyst; cationic catalyst system)
 IT 9002-88-4P, Polyethylene
 (cationic catalyst system)

L61 ANSWER 2 OF 8 HCA COPYRIGHT 2002 ACS

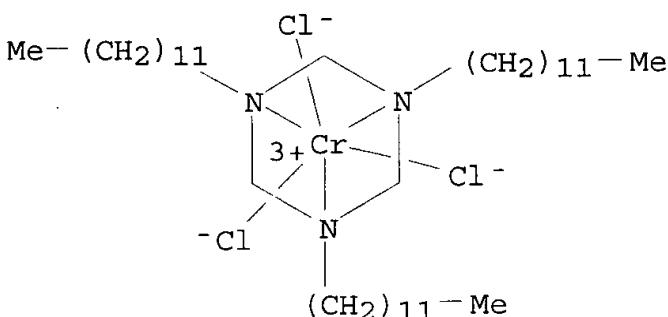
136:55532 Polyolefin wax pastes containing solvents. Mihan,
 Shahram; Deckers, Andreas (BASF Aktiengesellschaft, Germany). PCT
 Int. Appl. WO 2001098379 A1 20011227, 23 pp. DESIGNATED STATES: W;
 JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,
 MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO
 2001-EP6825 20010615. PRIORITY: DE 2000-20029329 20000620.

AB The title pastes, with good hardness and processability, contain
 polyolefins prepd. by polymn. in the presence of single-site
 catalysts based on tripnicogencyclohexane transition metal
 complexes. Polymn. of C₂H₄ in the presence of (1,3,5-tridodecyl-
 1,3,5-triazacyclohexane)trichlorochromium and Me aluminoxane (Al-Cr
 ratio 1000:1) and H (80 L) in isobutane at 90.degree./40 bar for 30
 min gave 460 g (14,000 kg/mol Cr-h) wax with no.-av. mol. wt. 2100,
 polydispersity 2.5, and m.p. 128.5.degree.. Stirring 20 parts this
 wax at 140.degree. into 100 parts benzene (b.p. 140-180.degree.) and
 cooling at 16.degree. gave a paste which, after 24 h at room temp.,
 had viscosity 370 mPa-s and hardness 450 mbar.

IT 299176-12-8
 (polymn. catalysts for polyolefin wax pastes contg.
 solvents)

RN 299176-12-8 HCA

CN Chromium, trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine-
 .kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)

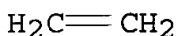


IT 9002-88-4
 (wax; **polyolefin** wax pastes contg. solvents)

RN 9002-88-4 HCA
 CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
 CMF C2 H4



IC ICM C08F010-00
 ICS C08F004-69; C08L091-06; C08L023-06; C09D191-06

CC 45-3 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
 Section cross-reference(s): 35, 67

ST **polyolefin** wax paste solvent; **polyethylene** wax
 paste solvent; catalyst polymn **polyolefin** wax; chromium
 complex catalyst polymn; triazacyclohexane chromium complex catalyst

IT Aluminoxanes
 (Me; polymn. catalysts for **polyolefin** wax pastes contg.
 solvents)

IT Ships
 (boats; **polyolefin** wax pastes contg. solvents for care
 of metal surfaces of boats)

IT Polymerization catalysts
 (chromium complexes-aluminoxanes; polymn. catalysts for
polyolefin wax pastes contg. solvents)

IT Floors
 (**polyolefin** wax pastes contg. solvents for care of
 floors)

IT Automobiles
 (**polyolefin** wax pastes contg. solvents for care of
 metal surfaces of automobiles)

IT Walls (construction)
 (**polyolefin** wax pastes contg. solvents for care of
 walls)

IT Transition metals, uses
 (tripnicogencyclohexane complexes; polymn. catalysts for
polyolefin wax pastes contg. solvents)

IT **Polyolefins**
 (waxes; **polyolefin** wax pastes contg. solvents)

IT 82496-19-3D, 1,3,5-Triphosphorinane, derivs., chromium complexes
 157071-76-6D, derivs., chromium complexes 299176-12-8
 (polymn. catalysts for **polyolefin** wax pastes contg.
 solvents)

IT 9002-88-4
 (wax; **polyolefin** wax pastes contg. solvents)

Andreas (Basf Aktiengesellschaft, Germany). PCT Int. Appl. WO 2001098377 A2 20011227, 24 pp. DESIGNATED STATES: W: JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2001-EP6823 20010615. PRIORITY: DE 2000-10029330 20000620.

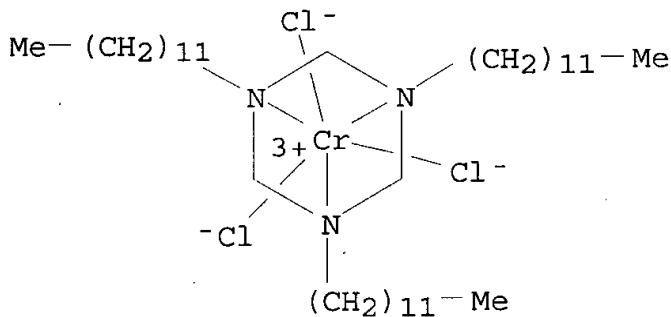
AB The title waxes, with mol. wt. 1000-40,000 and high hardness and acid and sapon. nos., are prep'd. by oxidizing **polyolefins** prep'd. in the presence of single-site catalysts based on transition metal complexes (Group 5-8) having .ltoreq.1 cyclopentadienyl group/metal atom. Polymg. C₂H₄ in the presence of 50 mg (n-C₁₂H₂₅NCH₂)₃CrCl₃, Me aluminoxane (Al-Cr ratio 1000:1), and 3.8 mol H in isobutane at 90.degree./40 bar for 40 min gave **polyethylene** (14,000 kg/mol Cr-h) with solidification point 128.5.degree., no.-av. mol. wt. 2100, and polydispersity 2.5. Oxidn. of this polymer at 160.degree. with air (30 L/h-kg) gave a wax with f.p. 122.3.degree., hardness 810 bar, melt viscosity (140.degree.) 215 cSt, and OH no. 20.5; vs. 117.2, 660, 150, and 20.5, resp., when prep'd. from **polyethylene** polymd. with a Ziegler-Natta catalyst.

IT 299176-12-8

(catalysts for manuf. of **polyolefins** for oxidn. to waxes)

RN 299176-12-8 HCA

CN Chromium, trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



IT 9002-88-4DP, oxidized
(oxidized **Polyolefin** waxes)

RN 9002-88-4 HCA

CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C₂ H₄

H₂C=CH₂

IC ICM C08F008-06

CC ICS C08F008-06; C08F008-10
 45-3 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
 Section cross-reference(s): 35, 67

ST oxidized **polyolefin** wax; **polyethylene** oxidized
 wax; catalyst **polymn olefin** wax manuf;
 transition metal catalyst **polymn olefin**,
 chromium complex catalyst **polymn ethylene**

IT Aluminoxanes
 (Me; catalysts for manuf. of **polyolefins** for oxidn. to
 waxes)

IT Transition metal complexes
 (catalysts for manuf. of **polyolefins** for oxidn. to
 waxes)

IT Waxes
 (oxidized **polyolefin** waxes)

IT Citrus
 (oxidized **polyolefin** waxes for use in coating citrus
 fruits)

IT Floors
 (oxidized **polyolefin** waxes for use in floor care)

IT Leather
 (oxidized **polyolefin** waxes for use in leather care)

IT **Polyolefins**
 (oxidized; oxidized **polyolefin** waxes)

IT Polymerization catalysts
 (transition metal complexes; catalysts for manuf. of
polyolefins for oxidn. to waxes)

IT 82496-19-3D, 1,3,5-Triphosphorinane, transition metal complexes
 157071-76-6D, transition metal complexes 299176-12-8
 (catalysts for manuf. of **polyolefins** for oxidn. to
 waxes)

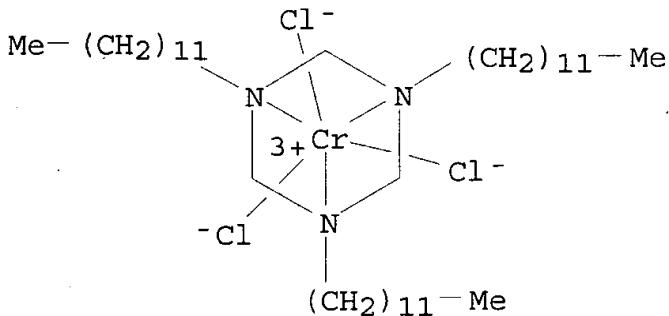
IT 9002-88-4DP, oxidized
 (oxidized **polyolefin** waxes)

L61 ~ANSWER~4~OF~8~ HCA ~COPYRIGHT 2002 ACS

136:55269 Pigment concentrates and their production. Mihan, Shahram;
 Deckers, Andreas (Basf Aktiengesellschaft, Germany). PCT Int. Appl.
 WO 2001098415 A2 20011227, 32 pp. DESIGNATED STATES: W: JP, US;
 RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
 PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2001-EP6689
 20010613. PRIORITY: DE 2000-10029327 20000620.

AB The invention relates to pigment concs. that comprises at least one
 color pigment and one **polyolefin** wax that is produced from
 one or more **olefins** by catalysis with a single-site
 catalyst of a transition metal of groups 5 to 8 of the periodic
 system, with the catalyst contg. not more than one cyclopentadienyl
 system per transition metal atom. The pigment concs. further
 optionally contain a thermoplastic material and optional additives.
 The compns. have improved retention of pigment strength. In
 examples, **polyethylene** waxes produced in the presence of
 tris(1,3,5-tridodecyl-1,3,5-triazacyclohexane)chromium trichloride
 and Me aluminoxane were combined with phthalocyanine blue and green

IT pigments and Lupolen 1800 S **polyethylene** and molded to give products with good color strength.
299176-12-8
 (polymn. catalyst for prodn. of **polyethylene** wax for pigment concs.)
 RN 299176-12-8 HCA
 CN Chromium, trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22) - (9CI) (CA INDEX NAME)



IT **9002-88-4P, Polyethylene**
 (wax; prodn. of **polyethylene** wax for pigment concs.)
 RN 9002-88-4 HCA
 CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4 $\text{H}_2\text{C}=\text{CH}_2$

IC ICM C09B069-00
 CC 42-6 (Coatings, Inks, and Related Products)
 Section cross-reference(s): 37
 ST pigment compn **polyethylene** wax; single site catalyst
polymn ethylene
 IT Pigments, nonbiological
 (prodn. of **polyethylene** wax for pigment concs.)
 IT **Polyolefins**
 Waxes
 (prodn. of **polyolefin** waxes for pigment concs.)
 IT Polymerization catalysts
 (single-site; polymn. catalyst for prodn. of **polyethylene** wax for pigment concs.)
 IT 147-14-8, Heliogen Blue K 6911D
 (blue pigment; prodn. of **polyethylene** wax for pigment concs.)
 IT **299176-12-8**
 (polymn. catalyst for prodn. of **polyethylene** wax for

pigment concs.)

IT 1328-53-6, Heliogen Green K 8730
(prodn. of **polyethylene** wax for pigment concs.)

IT 9002-88-4P, **Polyethylene**
(wax; prodn. of **polyethylene** wax for pigment concs.)

L61 ANSWER 5 OF 8 HCA COPYRIGHT 2002 ACS

136:54204 Catalyst system for **olefin polymerization**

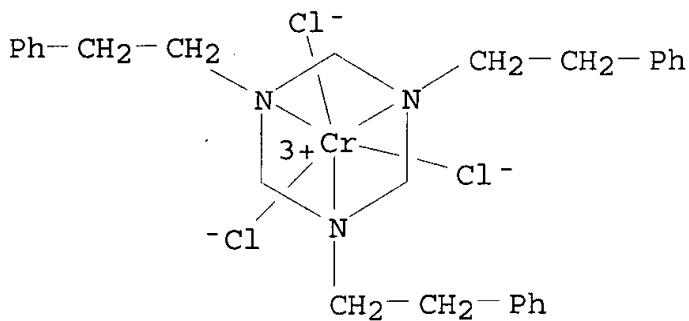
comprising calcined hydrotalcite as catalyst support. Mihan, Shahram; Schopf, Markus; Fraaije, Volker; Oberhoff, Markus; Huesgen, Nicola; Bidell, Wolfgang; Wulff-Doering, Joachim (Basell Polyolefine G.m.b.H., Germany). PCT Int. Appl. WO 2001096417 A2 20011220, 52 pp. DESIGNATED STATES: W: BR, CN, JP, KR, SG, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2001-EP6663 20010613. PRIORITY: DE 2000-10028432 20000613.

AB A title system, useful for polymn. of **olefins** and manuf. of **polyolefins** with reduced content of catalyst particle residues, comprises (A) calcined hydrotalcite, (B) .gtoreq.1 organotransition metal compd., (C) optionally .gtoreq.1 cation-forming compds., e.g., a linear or cyclic aluminoxane, and (D) .gtoreq.1 organomagnesium compd. For example, adding 18.6 mL of 4.75 M Me aluminoxane soln. in PhMe to a suspension of 287.1 mg Eurecen 5031 in 4.1 mL PhMe, stirring the mixt. for 45 min, combining the mixt. with 14.2 g dried calcined Mg-Al oxide (Puralox MG 61), stirring the whole for 60 min and removing volatiles at ambient temp. and 10-3 bar gave 20.2 g of a yellowish beige solid. Adding 24.0 mg of the latter catalyst to a soln. of 3 mL of butyloctylmagnesium (20% soln. in heptane) in 400 mL isobutane under Ar in an autoclave, pressurizing the autoclave for 90 min with 40 bar ethylene and polymg. at 70.degree. gave 400 g **polyethylene** (PE) with viscosity 3.68 dL/g and productivity 16,670 g PE/g catalyst.

IT 371238-49-2, [1,3,5-Tris-1-(2-phenylethyl)-1,3,5-triazacyclohexane]chromium trichloride
(catalyst system for **olefin polymn.**
comprising calcined hydrotalcite as catalyst support)

RN 371238-49-2 HCA

CN Chromium, trichloro[hexahydro-1,3,5-tris(2-phenylethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



IT 9002-88-4P, Polyethylene

(catalyst system for **olefin polymn.**

comprising calcined hydrotalcite as catalyst support)

RN 9002-88-4 HCA

CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1

CMF C2 H4

$\text{H}_2\text{C}=\text{CH}_2$

IC ICM C08F010-00

CC 35-3 (Chemistry of Synthetic High Polymers)

ST hydrotalcite calcined manuf **olefin polymn**
catalyst support; **ethylene polymn** metallocene
catalyst calcined hydrotalcite support; **polyethylene** manuf
metallocene catalyst calcined hydrotalcite support

IT Alkenes, uses

(C2-10, polymers; pre-polymd. catalyst system for **olefin polymn.** comprising calcined hydrotalcite as catalyst support)

IT Aluminoxanes

(Me; catalyst system for **olefin polymn.**

comprising calcined hydrotalcite as catalyst support)

IT Aluminoxanes

(catalyst system for **olefin polymn.**

comprising calcined hydrotalcite as catalyst support)

IT **Polyolefins**

(catalyst system for **olefin polymn.**

comprising calcined hydrotalcite as catalyst support)

IT Polymerization catalysts

(metallocene, metallocenes; catalyst system for **olefin polymn.** comprising calcined hydrotalcite as catalyst support)

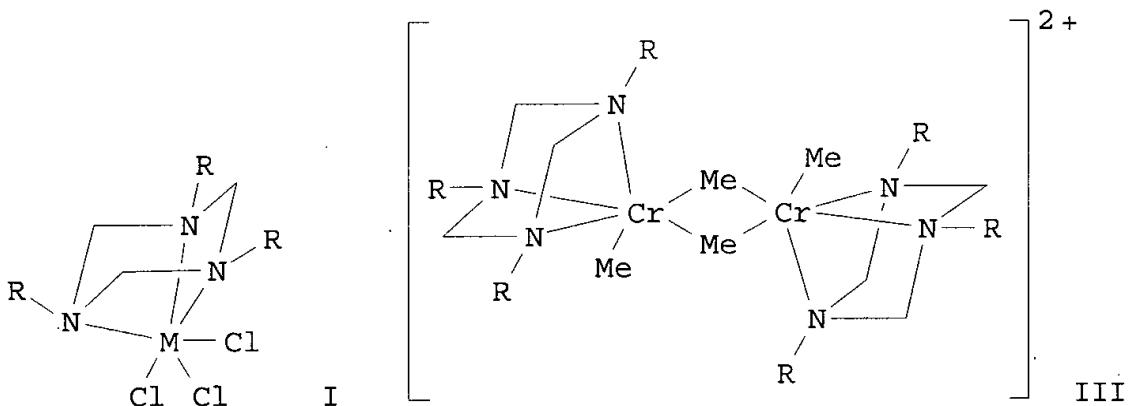
IT 12304-65-3, Hydrotalcite

(calcined; catalyst system for **olefin polymn.**

IT comprising calcined hydrotalcite as catalyst support)
 69929-18-6, Butyloctylmagnesium 73364-10-0, Eurecen 5031
 326799-72-8, Dichloro-[1-(8-quinolyl)-2,3,4,5-
 tetramethylcyclopentadienyl]chromium 326799-75-1,
 Dichloro-[1-(8-quinolyl)indenyl]chromium 371238-49-2,
 [1,3,5-Tris-1-(2-phenylethyl)-1,3,5-triaza-cyclohexane]chromium
 trichloride 381671-32-5, Puralox MG 61
 (catalyst system for olefin polymn.
 comprising calcined hydrotalcite as catalyst support)
 9002-88-4P, Polyethylene
 (catalyst system for olefin polymn.
 comprising calcined hydrotalcite as catalyst support)

L61 ANSWER 6 OF 8 HCA COPYRIGHT 2002 ACS
134:178188 Selective trimerization of *alpha*-olefins with
triazacyclohexane complexes of chromium as catalysts. Kohn, Randolph
D.; Haufe, Matthias; Kociok-Kohn, Gabriele; Grimm, Siegfried;
Wasserscheid, Peter; Keim, Wilhelm (Department of Chemistry,
University of Bath, Bath, BA2 7AY, UK). Angewandte Chemie,
International Edition, 39(23), 4337-4339 (English) 2000. CODEN:
ACIEF5. ISSN: 1433-7851. OTHER SOURCES: CASREACT 134:178188.
Publisher: Wiley-VCH Verlag GmbH.

GI



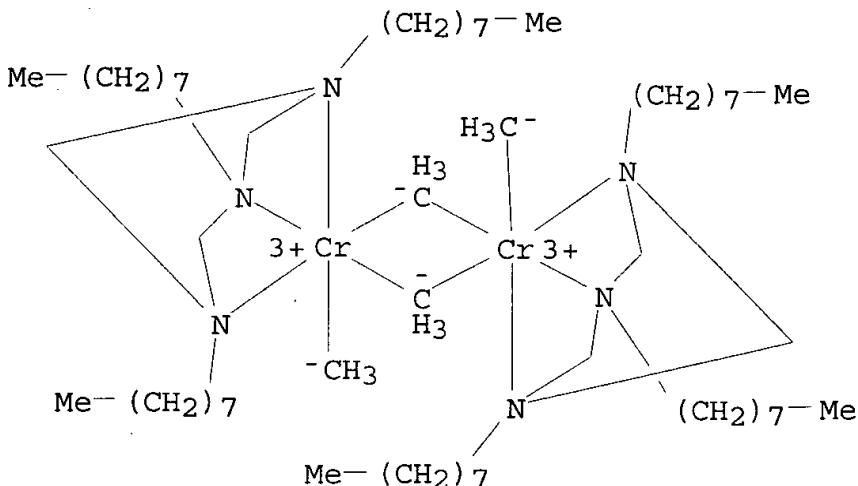
AB The PhMe sol. triazacyclohexane complexes [I; M = Cr, R = n-octyl(II), n-dodecyl; M = V, R = n-octyl] were prep'd. Methylaluminoxane methylated II to give the active trimerization catalyst III (R = n-octyl) for *alpha.-olefins*. The kinetics and mechanism of 1-hexene cotrimerization was examd. and discussed.

IT 326814-39-5 326814-40-8

(catalyst; selective trimerization of α -olefins with triazacyclohexane chromium complex catalysts)

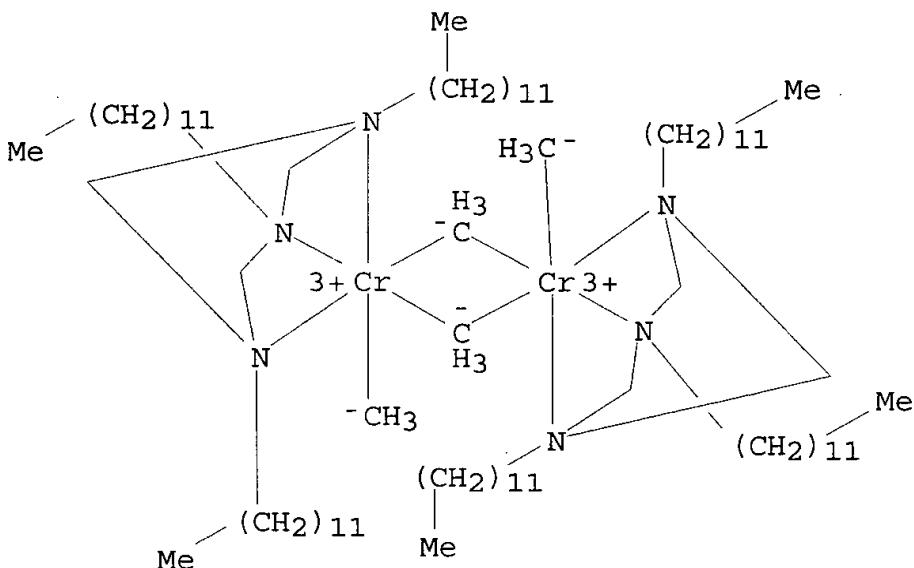
RN 326814-39-5 HCA

CN Chromium(2+), bis(hexahydro-1,3,5-trioctyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)di-.mu.-methyldimethyldi- (9CI) (CA INDEX NAME)



RN 326814-40-8 HCA

CN Chromium(2+), di-.mu.-methyldimethylbis(1,3,5-tridodecylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)di- (9CI) (CA INDEX NAME)

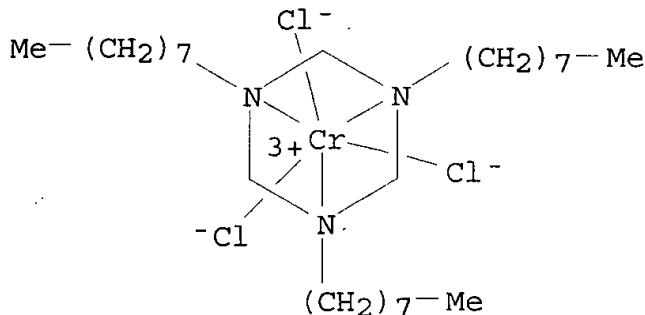


TT 275362-61-3P

(crystallog. of precatalyst; selective trimerization of α -olefins with triazacyclohexane chromium complex catalysts)

RN 275362-61-3 HCA

CN Chromium, trichloro(hexahydro-1,3,5-trioctyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



IT 326814-47-5P

(deuterated catalyst precursor; selective trimerization of .alpha.-olefins with triazacyclohexane chromium complex catalysts)

RN 326814-47-5 HCA

CN Chromium, trichloro(hexahydro-2,4,6-d3-1,3,5-trioctyl-1,3,5-triazine-2,4,6-d3-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)

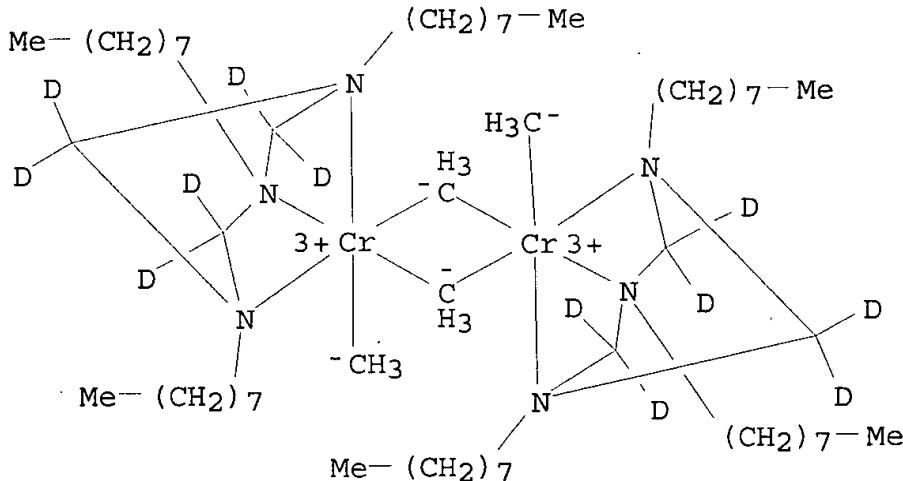
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 326814-49-7

(deuterated catalyst; selective trimerization of .alpha.-olefins with triazacyclohexane chromium complex catalysts)

RN 326814-49-7 HCA

CN Chromium(2+), bis(hexahydro-2,4,6-d3-1,3,5-trioctyl-1,3,5-triazine-2,4,6-d3-.kappa.N1,.kappa.N3,.kappa.N5)di-.mu.-methyldimethyldi- (9CI) (CA INDEX NAME)



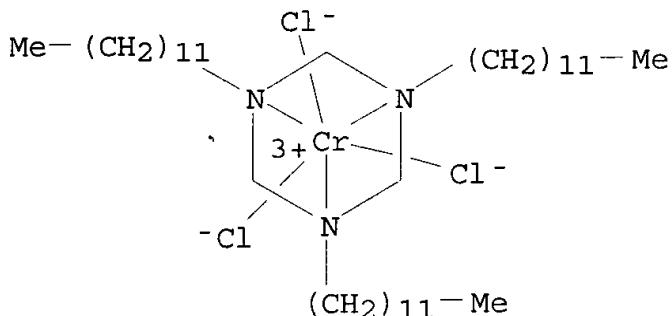
IT 299176-12-8P 326814-38-4P

(precatalyst; selective trimerization of .alpha.-olefins

with triazacyclohexane chromium complex catalysts)

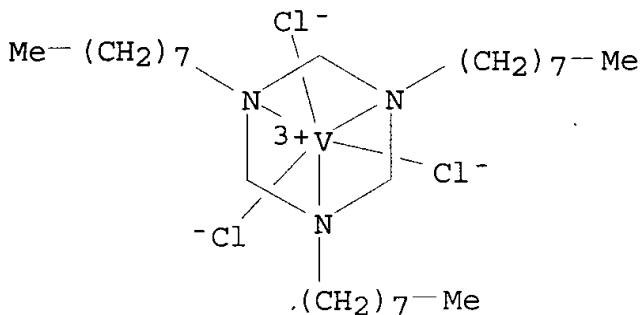
RN 299176-12-8 HCA

CN Chromium, trichloro(1,3,5-tridodecylhexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 326814-38-4 HCA

CN Vanadium, trichloro(hexahydro-1,3,5-trioctyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)

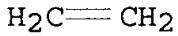


IT 74-85-1, Ethene, reactions 115-07-1, Propene, reactions

(selective trimerization of .alpha.-olefins with triazacyclohexane chromium complex catalysts)

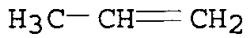
RN 74-85-1 HCA

CN Ethene (9CI) (CA INDEX NAME)



RN 115-07-1 HCA

CN 1-Propene (9CI) (CA INDEX NAME)



CC 22-4 (Physical Organic Chemistry)

Section cross-reference(s): 29, 36, 75, 78

ST trimerization olefin triazacyclohexane complex chromium

IT catalyst crystallog
Aluminoxanes
(Mé; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT NMR (nuclear magnetic resonance)
(chem. shift, 2H; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT Addition reaction
Addition reaction kinetics
(oxidative; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT Elimination reaction
Elimination reaction kinetics
(reductive; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT Crystal structure
Insertion reaction
Insertion reaction kinetics
Magnetic moment
Molecular structure
Steric effects
Trimerization
Trimerization catalysts
Trimerization kinetics
UV and visible spectra
(selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT Alkenes, reactions
(.alpha.-; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT NMR (nuclear magnetic resonance)
(2H; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT 326814-39-5 326814-40-8
(catalyst; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT 111-86-4, Octylamine 43094-80-0, Perdeuterioparaformaldehyde
(conversion to ligand for catalyst formation; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT 275362-61-3P
(crystallog. of precatalyst; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT 326814-47-5P 326814-48-6P
(deuterated catalyst precursor; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

IT 326814-49-7
(deuterated catalyst; selective trimerization of .alpha.-**olefins** with triazacyclohexane chromium complex catalysts)

catalysts)

IT 6281-19-2 10170-68-0 19559-06-9 94279-01-3
(formation of catalyst precatalyst complex; selective trimerization of α -olefins with triazacyclohexane chromium complex catalysts)

IT 299176-12-8P 326814-38-4P
(precatalyst; selective trimerization of α -olefins with triazacyclohexane chromium complex catalysts)

IT 592-41-6, 1-Hexene, reactions
(selective trimerization of α -olefins with triazacyclohexane chromium complex catalysts)

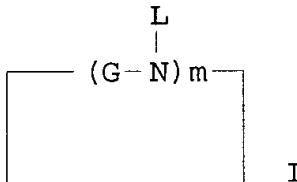
IT 74-85-1, Ethene, reactions 100-42-5, Styrene, reactions
115-07-1, Propene, reactions
(selective trimerization of α -olefins with triazacyclohexane chromium complex catalysts)

IT 326814-41-9P 326814-42-0P 326814-43-1P 326814-44-2P
326814-45-3P 326814-46-4P
(selective trimerization of α -olefins with triazacyclohexane chromium complex catalysts)

L61 ANSWER 7 OF 8 HCA COPYRIGHT 2002 ACS

134:72051 Ethylene oligomerization and its catalysts comprising chromium coordination compounds and alkylmetal compounds. Mimura, Hideyuki; Oguri, Motohiro; Yamamoto, Toshihide; Okada, Hisanori; Yoshida, Osamu (Tosoh Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2001002723 A2 20010109, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-178551 19990624.

GI



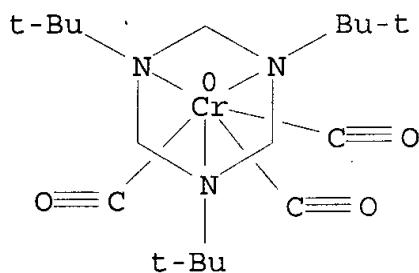
AB The catalysts consist of (i) Cr coordination compds. having cyclic multidentate amine ligands I ($m = 3-5$; G = bivalent hydrocarbons; L = C1-20 tertiary alkyl and/or C1-20 tertiary silyl) and (ii) alkylmetal compds. Ethylene oligomerization in the presence of the claimed catalysts, for prepn. of C4-30 α -olefins (esp. 1-hexene), is also claimed. Thus, 146 mg 1,3,5-tri-tert-butyl-1,3,5-triazacyclohexane (prepd. from HCHO and tert-butylamine) was reacted with 110 mg Cr hexacarbonyl to give 1,3,5-tri-tert-butyl-1,3,5-triazacyclohexanechromium tricarbonyl(0) (A). Then, ethylene was oligomerized in a reactor contg. A and (i-Bu)3Al at 80.degree. to give C4-30 α -olefins including hexene of 1-hexene purity 98%.

IT 190122-85-1P

(ethylene oligomerization catalysts comprising chromium coordination compds. and alkylmetal compds.)

RN 190122-85-1 HCA

CN Chromium, tricarbonyl[1,3,5-tris(1,1-dimethylethyl)hexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



IT 74-85-1, Ethylene, reactions

(ethylene oligomerization catalysts comprising chromium coordination compds. and alkylmetal compds.)

RN 74-85-1 HCA

CN Ethene (9CI) (CA INDEX NAME)

$\text{H}_2\text{C}=\text{CH}_2$

IC ICM C08F004-69
ICS C08F110-02

CC 35-3 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 29, 78

IT 190122-85-1P

(ethylene oligomerization catalysts comprising chromium coordination compds. and alkylmetal compds.)

IT 74-85-1, Ethylene, reactions

(ethylene oligomerization catalysts comprising chromium coordination compds. and alkylmetal compds.)

L61 ANSWER 8 OF 8 HCA COPYRIGHT 2002 ACS

133:45197 Oligomerization of **olefins** by using catalysts

containing complex of chromium compd and 1,3,5-triazacyclohexane.
Jones, Michael David; Grimm, Seifgried; Keim, Wilhelm; Wasserscheid, Peter (BP Chemicals Limited, UK). PCT Int. Appl. WO 2000034211 A1 20000615, 14 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2.

APPLICATION: WO 1999-GB4010 19991201. PRIORITY: GB 1998-26755

19981204.

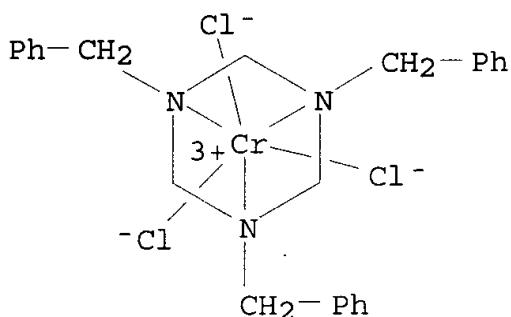
AB The C8-36 .alpha.-olefins are trimerized or oligomerized in the presence of a catalyst comprising a complex of chromium compd and a 1,3,5-triazacyclohexane in a solvent at temp. <20.degree. to give a polyolefin with trimer content .gt;eq. 70 mol%. The polyolefin is catalytically hydrogenated to lubricating oils. Thus, 10 mL 1-decene was reacted in the presence of a catalyst contg. a complex of tri-n-octyl-1,3,5-triazacyclohexane, and chromium trichloride, and Me alumininoxane (MAO) in 10 mL toluene at 0.degree. for 48 h to give 1-decene trimer 92 mol%.

IT 172166-82-4P 275362-61-3P 275362-62-4P
275362-63-5P

(oligomerization of olefins by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)

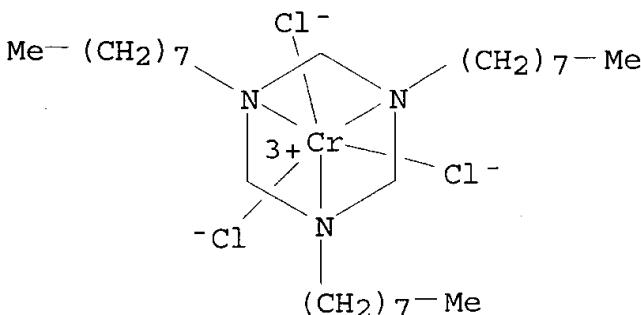
RN 172166-82-4 HCA

CN Chromium, trichloro[hexahydro-1,3,5-tris(phenylmethyl)-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



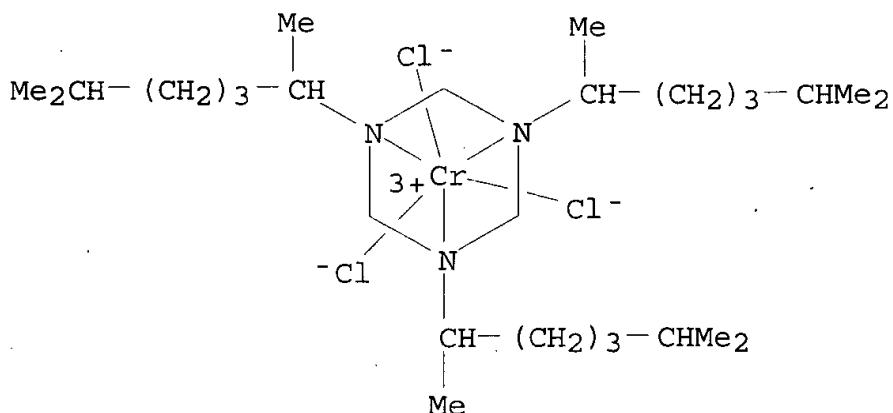
RN 275362-61-3 HCA

CN Chromium, trichloro(hexahydro-1,3,5-trioctyl-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5)-, (OC-6-22)- (9CI) (CA INDEX NAME)

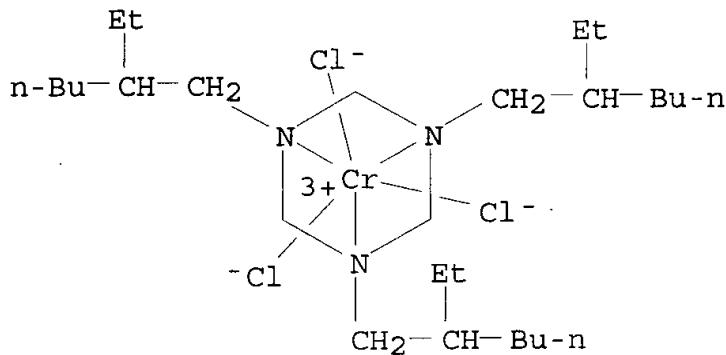


RN 275362-62-4 HCA

CN Chromium, trichloro[1,3,5-tris(1,5-dimethylhexyl)hexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



RN 275362-63-5 HCA
 CN Chromium, trichloro[1,3,5-tris(2-ethylhexyl)hexahydro-1,3,5-triazine-.kappa.N1,.kappa.N3,.kappa.N5]-, (OC-6-22)- (9CI) (CA INDEX NAME)



IC ICM C07C002-32
 ICS C10G050-02
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
 Section cross-reference(s): 23, 67
 ST olefin oligomerization triazacyclohexane chromium complex catalyst; decene trimer prepn chromium complex catalyst; lubricating oil hydrogenated polyolefin
 IT Aluminoxanes
 (Me; oligomerization of olefins by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)
 IT Transition metal halides
 (chromium halides; prepn. chromium catalysts for oligomerization of olefins)
 IT Hydrogenation
 Lubricating oils
 Trimerization
 Trimerization catalysts
 (oligomerization of olefins by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)

IT Polymerization
 Polymerization catalysts
 (oligomerization; oligomerization of **olefins** by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)

IT Polyolefins
 (trimers or oligomers; oligomerization of **olefins** by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)

IT Alkenes, reactions
 (.alpha.-, C8-36, starting materials; oligomerization of **olefins** by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)

IT 172166-82-4P 275362-61-3P 275362-62-4P
 275362-63-5P
 (oligomerization of **olefins** by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)

IT 14638-82-5DP, 1-Decene trimer, hydrogenated 14638-82-5P, 1-Decene trimer 72607-66-0DP, 1-Dodecene, trimer, hydrogenated 72607-66-0P, 1-Dodecene, trimer
 (oligomerization of **olefins** by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)

IT 110-90-7D, 1,3,5-Triazacyclohexane, hydrocarbyl derivs. 2547-66-2
 6281-19-2 10170-68-0, Tris(tetrahydrofuran)chromium trichloride
 93942-45-1 94279-01-3 156558-36-0 274913-16-5 275364-95-9
 (prepn. chromium catalysts for oligomerization of **olefins**)

IT 111-66-0, 1-Octene 112-41-4, 1-Dodecene 112-88-9, 1-Octadecene
 629-73-2, 1-Hexadecene 872-05-9, 1-Decene 27400-78-8, Eicosene
 (starting material; oligomerization of **olefins** by using catalysts contg. complex of chromium compds. and 1,3,5-triazacyclohexane)

=> d 162 1-13 cbib abs hitstr hitind

L62 ANSWER 1 OF 13 HCA COPYRIGHT 2002 ACS

137:114598 Cr(III) Complex anions in drug analysis and monitoring.
 Determination of nicotinamide (vitamin PP). Ganescu, Ion;
 Papa, Ion; Ganescu, Anca; Chirigiu, Liviu; Barbu, Alin; Cartana,
 Daniela (Fac. de Chim., Univ. Craiova, Craiova, 1100, Rom.).
 Revista de Chimie (Bucharest, Romania), 52(10), 559-562 (Romanian)
 2001. CODEN: RCBUAU. ISSN: 0034-7752. Publisher: SYSCOM 18 SRL.

AB Some new gravimetric, oxidimetric and spectrometric methods for the detn. of nicotinamide as nicotinamide H[Cr(NCS)4(NH3)2] (A) and nicotinamide H[Cr(NCS)4(aniline)2] (B). The exptl. data statistic processing proves that our methods are accurate enough and not affected by systematic errors.

IT 443360-89-2

(Cr(III) complex anions in drug anal. and monitoring. Detn. of nicotinamide (vitamin PP))

RN 443360-89-2 HCA

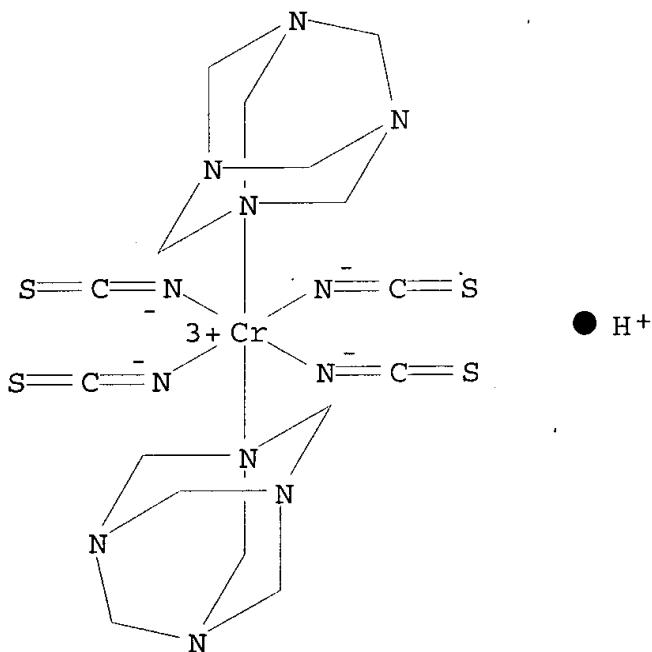
CN Chromate(1-), bis(1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane-.kappa.N1)tetrakis(thiocyanato-.kappa.N)-, hydrogen, compd. with 3-pyridinecarboxamide (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 308804-28-6

CMF C16 H24 Cr N12 S4 . H

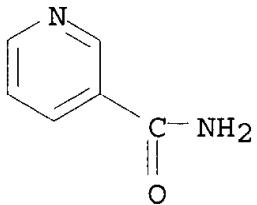
CCI CCS



CM 2

CRN 98-92-0

CMF C6 H6 N2 O

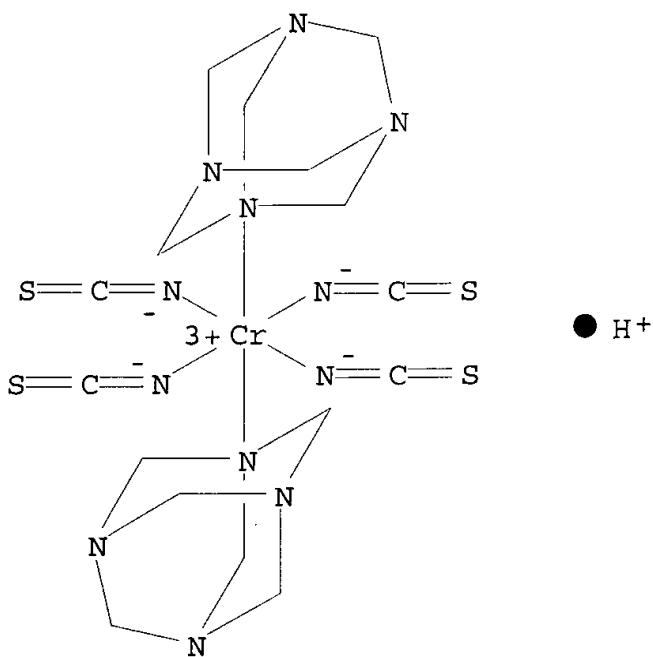


IT 308804-28-6

(Cr(III) complex anions in drug anal. and monitoring. Detn. of nicotinamide (vitamin PP))

RN 308804-28-6 HCA

CN Chromate(1-), bis(1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane-.kappa.N1)tetrakis(thiocyanato-.kappa.N)-, hydrogen (9CI) (CA INDEX NAME)



CC 64-2 (Pharmaceutical Analysis)

IT Gravimetric analysis

Spectroscopy

(Cr(III) complex anions in drug anal. and monitoring. Detn. of nicotinamide (vitamin PP))

IT 98-92-0, Nicotinamide

(Cr(III) complex anions in drug anal. and monitoring. Detn. of nicotinamide (vitamin PP))

IT 443360-70-1 443360-71-2 443360-72-3 443360-83-6 443360-88-1
443360-89-2

(Cr(III) complex anions in drug anal. and monitoring. Detn. of nicotinamide (vitamin PP))

IT 1332-53-2 16065-83-1, Chromium(III), uses 16925-04-5
47599-85-9 130086-71-4 158882-34-9 **308804-28-6**

(Cr(III) complex anions in drug anal. and monitoring. Detn. of nicotinamide (vitamin PP))

L62 ANSWER 2 OF 13 HCA COPYRIGHT 2002 ACS

134:347473 Durability-enhanced magnetic disks including organic-inorganic hybrid layers and their manufacture. Sugano, Toshiyuki (Fuji Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001126240 A2 20010511, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-307652 19991028.

AB The disks comprise thermoplastics and have org.-inorg. hybrid layers prep'd. from (i) (meth)acryloyl-terminated monomer, oligomer, or

polymers bearing OH, carboxyl, or amino groups and (ii) alkoxides, phenoxides, acylates, or chelate compds. of Al, Ti, Zr, Si, In, Zn, Ni, or Cu. The manufg. process involves formation of the hybrid layers by polymn. and thermal crosslinking.

IT 337530-86-6P, Aronix M 215-Aronix M 305-Aronix M 5700-Denacol DA 314-TBT copolymer 337530-87-7P, Aronix M 215-Aronix M 8030-Denacol DA 721-tetraisopropoxysirconium copolymer (interlayer; plastic-based magnetic disks having org.-inorg. hybrid interlayers and showing good durability)

RN 337530-86-6 HCA

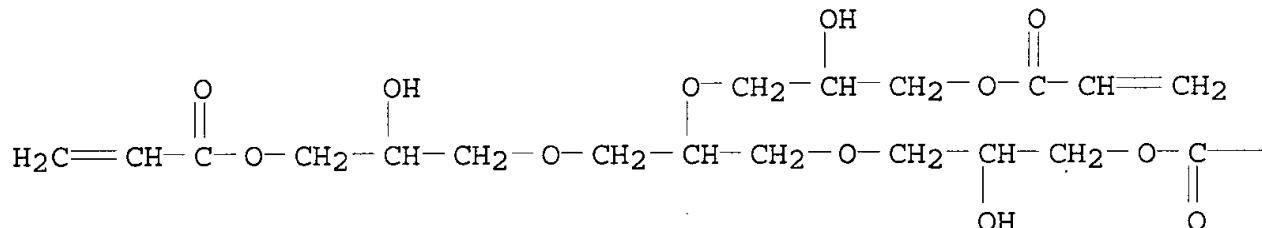
CN 2-Propenoic acid, 1,2,3-propanetriyltris[oxy(2-hydroxy-3,1-propanediyl)] ester, polymer with 1-butanol titanium(4+) salt, [dihydro-5-(2-hydroxyethyl)-2,4,6-trioxo-1,3,5-triazine-1,3(2H,4H)-diyl]di-2,1-ethanediyl di-2-propenoate, 2-(hydroxymethyl)-2-[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl di-2-propenoate and 2-hydroxy-3-phenoxypropyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 90802-83-8

CMF C21 H32 O12

PAGE 1-A



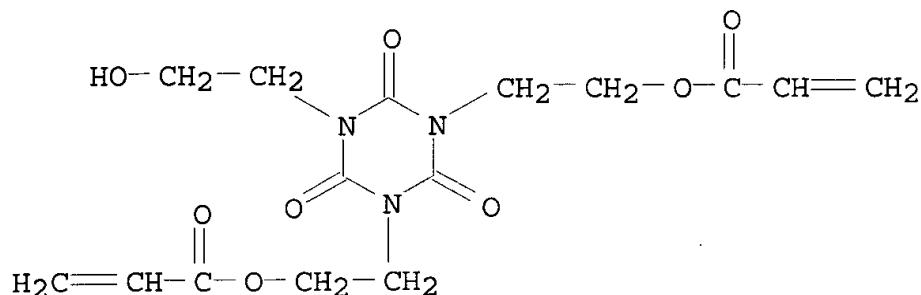
PAGE 1-B

— CH = CH₂

CM 2

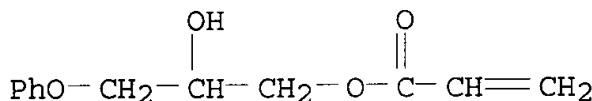
CRN 87605-70-7

CMF C15 H19 N3 O8



CM 3

CRN 16969-10-1
CMF C12 H14 O4



CM 4

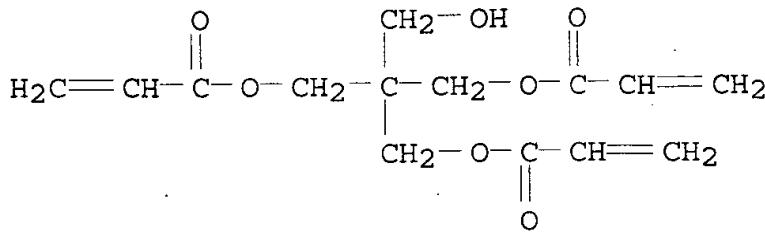
CRN 5593-70-4
CMF C4 H10 O . 1/4 Ti



1/4 Ti (IV)

CM 5

CRN 3524-68-3
CMF C14 H18 07



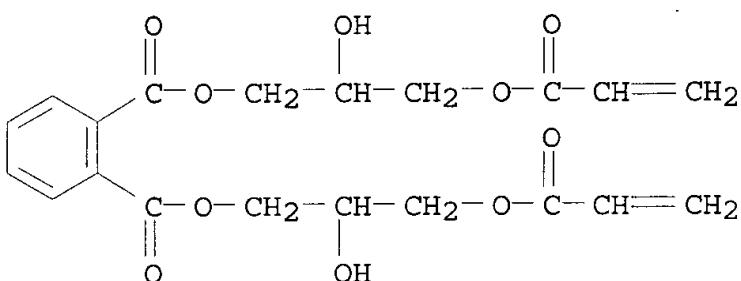
RN 337530-87-7 HCA

CN 1,2-Benzenedicarboxylic acid, bis[2-hydroxy-3-[(1-oxo-2-propenyl)oxy]propyl] ester, polymer with Aronix M 8030, [dihydro-5-(2-hydroxyethyl)-2,4,6-trioxo-1,3,5-triazine-1,3(2H,4H)-diyl]di-2,1-ethanediyl di-2-propenoate and 2-propanol zirconium(4+) salt (9CI) (CA INDEX NAME)

CM 1

CRN 93402-78-9

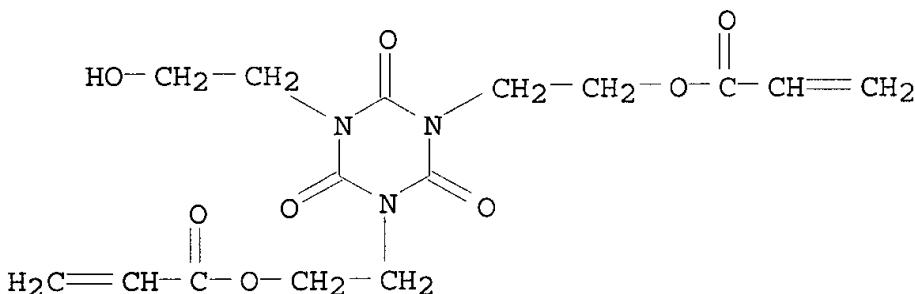
CMF C20 H22 O10



CM 2

CRN 87605-70-7

CMF C15 H19 N3 O8



CM 3

CRN 61287-25-0

CMF Unspecified

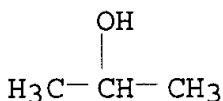
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 4

CRN 2171-98-4

CMF C3 H8 O . 1/4 Zr



1/4 Zr(IV)

IC ICM G11B005-738
 ICS C08F002-44; C08F002-46; C08K005-04; C08L033-06; C08L101-00;
 G11B005-84

CC 77-8 (Magnetic Phenomena)
 Section cross-reference(s): 38

IT Polycarbonates, processes
Polyolefins
 (substrates; plastic-based magnetic disks having org.-inorg.
 hybrid interlayers and showing good durability)

IT 337530-86-6P, Aronix M 215-Aronix M 305-Aronix M
 5700-Denacol DA 314-TBT copolymer 337530-87-7P, Aronix M
 215-Aronix M 8030-Denacol DA 721-tetraisopropoxyzirconium copolymer
 338386-13-3P, Aronix M 305-Aronix M 5700-Denacol DA 314-Kayarad
 DPFA-TPT copolymer
 (interlayer; plastic-based magnetic disks having org.-inorg.
 hybrid interlayers and showing good durability)

L62 ANSWER 3 OF 13 HCA COPYRIGHT 2002 ACS
 133:316770 Water-Soluble Organometallic Compounds. 9.Catalytic
 Hydrogenation and Selective Isomerization of **Olefins** by
 Water-Soluble Analogues of Vaska's Complex. Kovacs, Jozsef; Todd,
 Tara Decuir; Reibenspies, Joseph H.; Joo, Ferenc; Darenbourg,
 Donald J. (Research Group on Homogeneous Catalysis of the Hungarian
 Academy of Sciences at the Institute of Physical Chemistry,
 University of Debrecen, Debrecen, Hung.). Organometallics, 19(19),
 3963-3969 (English) 2000. CODEN: ORGND7. ISSN: 0276-7333.
 Publisher: American Chemical Society.

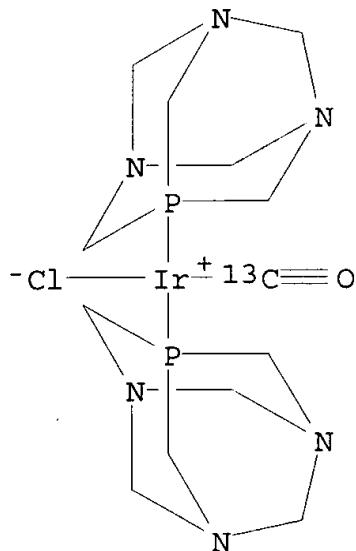
AB Water-sol. analogs of Vaska's complex, trans-[IrCl(CO)(PPh₃)₂], were
 prep'd. using the water-sol. phosphine ligands sodium
 diphenyl(m-sulfonatophenyl)phosphine (TPPMS) and
 1,3,5-triaza-7-phosphaadamantane (PTA). The structural parameters
 in trans-[IrCl(CO)(TPPMS)₂], where the sodium cations are
 encapsulated with kryptofix-221, closely resemble those found in the
 parent complex, as revealed by x-ray crystallog. ¹³C and ³¹P NMR of
 the PTA deriv. demonstrate the trans arrangement for phosphine
 ligands in this deriv. as well. The oxygen adduct
 [(O₂)IrCl(CO)(TPPMS)₂] was isolated and identified by IR
 spectroscopy (.nu.CO = 2012 cm⁻¹ and .nu.O₂ = 854 cm⁻¹) and ³¹P NMR
 (.delta. 12.8 ppm). The soln. behavior of trans-[IrCl(CO)(TPPMS)₂]
 (1) in water is markedly different from that of Vaska's complex in
 org. solvent; i.e., reactions with O₂ and H₂ are irreversible due to

formation of the strongly hydrated proton and chloride ions produced during these processes. Importantly, complex 1 is an active catalyst for the hydrogenation of **olefinic** double bonds in short-chain unsatd. acids in aq. soln. Included in these studies were crotonic, maleic, fumaric, and .alpha.-acetamidocinnamic acids. The turnover frequency for the hydrogenation of maleic acid in water was significantly greater employing 1 as a catalyst than the comparable process involving Vaska's complex in dimethylacetamide at a much higher temp. In addn. complex 1 is an effective catalyst for both hydrogenation and isomerization of unsatd. fatty acids in soybean lecithin. More significantly was the observation that *cis-trans* isomerization was selective over hydrogenation in these liposomes; for example, oleic acid was isomerized to elaidic acid with little hydrogenation.

IT 301685-92-7P

(prepn. and isotope effect in IR and ^{31}P NMR spectra)

RN 301685-92-7 HCA

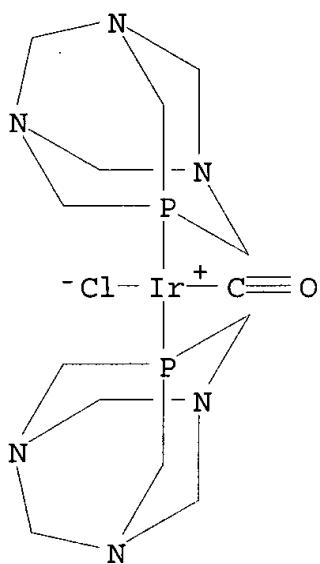
CN Iridium, carbonyl- ^{13}C -chlorobis(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-.kappa.P7)-, (SP-4-3)- (9CI) (CA INDEX NAME)

IT 301685-89-2P

(prepn. of)

RN 301685-89-2 HCA

CN Iridium, carbonylchlorobis(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-.kappa.P7)-, (SP-4-3)- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 26, 67, 75

ST **olefin** hydrogenation isomerization catalyst iridium sulfonatophenylphosphine; crystal structure iridium carbonyl chloro sulfonatophenylphosphine; iridium sulfonatophenylphosphine structure **olefin** hydrogenation isomerization catalyst; triazaphosphadamatane iridium chloro carbonyl complex prepn

IT Isomerization catalysts
 (cis-trans; crystal structure and catalytic activity of iridium carbonyl chloro diphenyl(sulfonatophenyl)phosphine complex for hydrogenation and isomerization of **olefins**)

IT Hydrogenation catalysts
 (crystal structure and catalytic activity of iridium carbonyl chloro diphenyl(sulfonatophenyl)phosphine complex for hydrogenation and isomerization of **olefins**)

IT Alkenes, reactions
 (hydrogenation and isomerization of **olefins** using iridium carbonyl chloro diphenyl(sulfonatophenyl)phosphine complex catalyst)

IT Crystal structure
 Molecular structure
 (of iridium carbonyl chloro diphenyl(sulfonatophenyl)phosphine complex hydrogenation and isomerization catalyst for **olefins**)

IT Lecithins
 (soya; catalytic activity of iridium carbonyl chloro diphenyl(sulfonatophenyl)phosphine complex for hydrogenation of short chain **olefins** and hydrogenation and isomerization of unsatd. fatty acids in soybean lecithin)

IT Fatty acids, reactions
 (unsatd.; catalytic activity of iridium carbonyl chloro

diphenyl(sulfonatophenyl)phosphine complex for hydrogenation of short chain **olefins** and hydrogenation and isomerization of unsatd. fatty acids in soybean lecithin)

IT 60-33-3, Linoleic acid, reactions 110-16-7, Maleic acid, reactions 110-17-8, Fumaric acid, reactions 112-79-8, Elaidic acid 112-80-1, Oleic acid, reactions 463-40-1, Linolenic acid 3724-65-0, Crotonic acid 5469-45-4, α -Acetamidocinnamic acid (catalytic activity of iridium carbonyl chloro diphenyl(sulfonatophenyl)phosphine complex for hydrogenation of short chain **olefins** and hydrogenation and isomerization of unsatd. fatty acids in soybean lecithin)

IT 301685-92-7P (prepn. and isotope effect in IR and 31P NMR spectra)

IT 301685-88-1P 301685-89-2P (prepn. of)

IT 31364-42-8, Kryptofix-221 (reactant for prepn. of sodium-kryptofix-221 salt of iridium carbonyl chloro diphenyl(sulfonatophenyl)phosphine complex **olefin** hydrogenation and isomerization catalyst)

IT 128163-21-3 (reactions with H2 and O2 in methoxyethanol and aq. solns. and catalytic activity for hydrogenation of short chain **olefins** and hydrogenation and isomerization of unsatd. fatty acids in soybean lecithin)

L62 ANSWER 4 OF 13 HCA COPYRIGHT 2002 ACS

126:271327 Nickel(0) and palladium(0) complexes with 1,3,5-triaza-7-phosphaadamantane. Catalysis of buta-1,3-diene oligomerization or telomerization in an aqueous biphasic system. Cermak, Jan; Kvicalova, Magdalena; Blechta, Vratislav (Inst. Chem. Process Fundamentals, Acad. Sci. Czech Republic, Prague, 165 02, Czech Rep.). Collection of Czechoslovak Chemical Communications, 62(2), 355-363 (English) 1997. CODEN: CCCCAK. ISSN: 0010-0765. Publisher: Institute of Organic Chemistry and Biochemistry, Academy of Sciences of the Czech Republic.

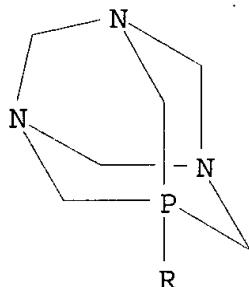
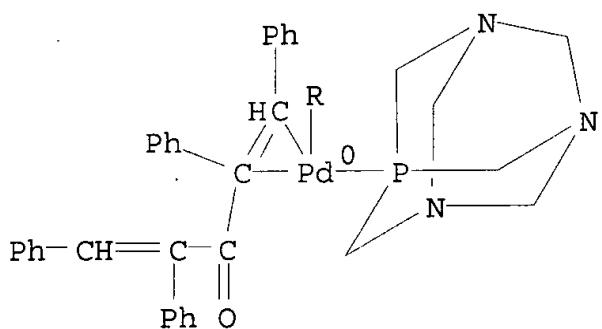
AB New homoleptic Ni(0) and Pd(0) complexes with a water-sol. ligand, 1,3,5-triaza-7-phosphaadamantane, were prep'd. and characterized by 1H, 13P NMR spectra. The complexes, together with the known analogous Ni(0) and Pd(0) complexes with tris(hydroxymethyl)phosphine, are catalysts for buta-1,3-diene oligomerization or telomerization with H2O in an aq. biphasic system without a cosolvent or a modifier. Tetrakis[tris(hydroxymethyl)phosphine]nickel preferentially catalyzes oligomerization (both linear and cyclic) in the 1st example of a Ni-catalyzed buta-1,3-diene oligomerization in an aq. biphasic system. Pd complexes give telomers or linear oligomers in quant. yields. In the case of the triazaphosphaadamantane complex, high selectivity to octadienyl ethers (87%) was obsd. High values of metal leaching into the product phase in these reactions suggest an easy extn. of starting or intermediate metal complexes caused by the fact that both monomer and products are good ligands for the metal complexes in this particular case.

IT 188747-93-5P

(formation in prepn. of palladium triazaphosphaadamantane complex)

RN 188747-93-5 HCA

CN Palladium, [(1,2-.eta.)-1,2,4,5-tetraphenyl-1,4-pentadien-3-one]bis(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-.kappa.P7)-, (E,E)- (9CI) (CA INDEX NAME)

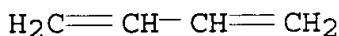


IT 106-99-0, Buta-1,3-diene, reactions

(oligomerization and telomerization in presence of nickel and palladium triazaphosphaadamantane/tris(hydroxymethyl)phosphine complex catalysts)

RN 106-99-0 HCA

CN 1,3-Butadiene (8CI, 9CI) (CA INDEX NAME)



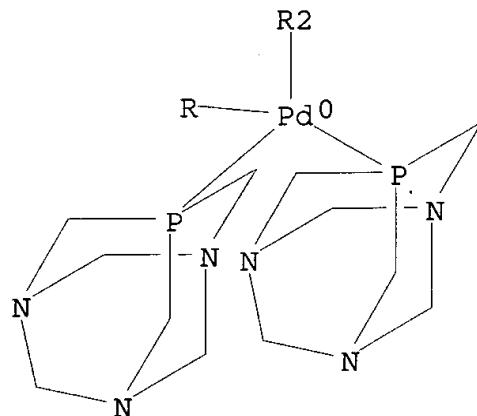
IT 188747-92-4P

(prepn. and catalysis in oligomerization and telomerization of butadiene)

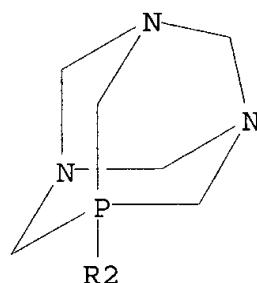
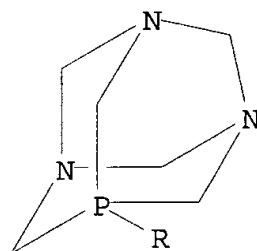
RN 188747-92-4 HCA

CN Palladium, tetrakis(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-.kappa.P7)-, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



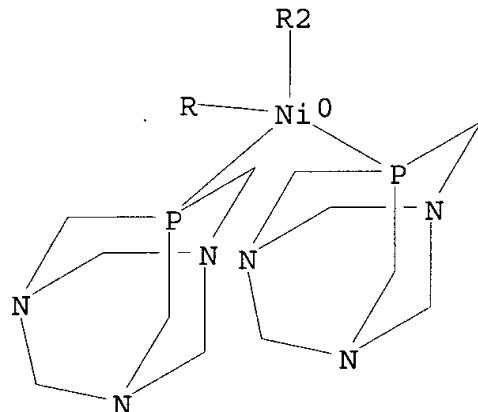
IT 188747-91-3P

(prepn. and lack of catalysis in oligomerization and
telomerization of butadiene)

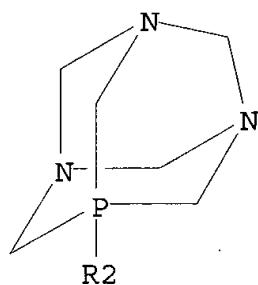
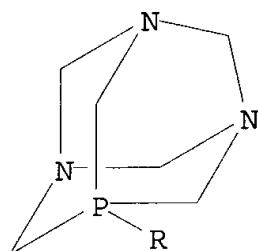
RN 188747-91-3 HCA

CN Nickel, tetrakis(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-
.kappa.P7)-, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 2, 23, 67
 IT **188747-93-5P**
 (formation in prepn. of palladium triazaphosphad adamantane complex).
 IT **106-99-0**, Buta-1,3-diene, reactions
 (oligomerization and telomerization in presence of nickel and palladium triazaphosphad adamantane/tris(hydroxymethyl)phosphine complex catalysts)

IT 125383-71-3P 188747-92-4P
 (prepn. and catalysis in oligomerization and telomerization of butadiene)

IT 188747-91-3P
 (prepn. and lack of catalysis in oligomerization and telomerization of butadiene)

L62 ANSWER 5 OF 13 HCA COPYRIGHT 2002 ACS
 125:85901 Aqueous organometallic chemistry: the mechanism of catalytic hydrogenations with chlorotris(1,3,5-triaza-7-phosphaadamantane)rhodium(I). Joo, Ferenc; Nadasdi, Levente; Benyei, Attila Cs.; Darenbourg, Donald J. (Institute of Physical Chemistry, Lajos Kossuth University, Debrecen, H-4010, Hung.). Journal of Organometallic Chemistry, 512(1-2), 45-50 (English) 1996. CODEN: JORCAI. ISSN: 0022-328X. Publisher: Elsevier.

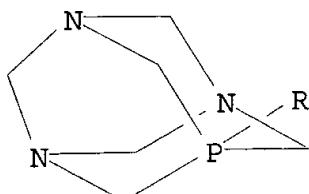
AB The water-sol. phosphine complex of Rh(I), RhCl(PTA)3 (1) was shown to be an active catalyst for the hydrogenation of various **olefinic** and oxo-acids, as well as of allyl alc. and 4-sulfostyrene in aq. soln. under mild conditions. Detailed kinetic investigations were carried out with crotonic acid and allyl alc. as substrates. The rate of hydrogenation of both compds. showed a sharp max. as a function of pH at 4.7. Hydrogenation of itaconic, crotonic and α -acetamidocinnamic acid in D2O led to 45-100% deuteration of the products with 25-100% stereoselectivity towards the α -carbon atom. These results, together with those of pH-static hydrogenation of complex 1, suggest that water strongly assists the dehydrochlorination of 1 to yield the catalytically active monohydrido species HRh(PTA)3 (2). Nevertheless, depending on the substrate and the pH of the soln. the dihydridic pathway may remain partially operative.

IT 178476-72-7
 (mechanism of catalytic aq. hydrogenations with chlorotris(1,3,5-triaza-7-phosphaadamantane)rhodium(I))

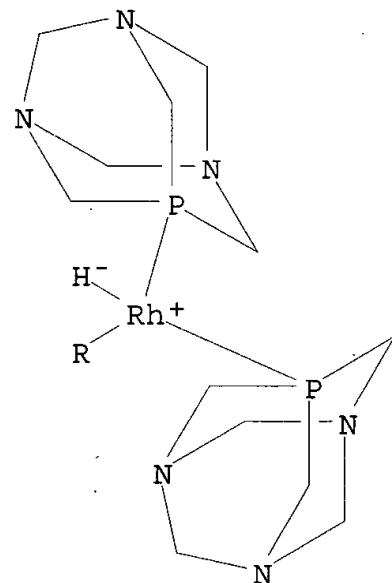
RN 178476-72-7 HCA

CN Rhodium, hydrotris(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-
 P7)-, (SP-4-2)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



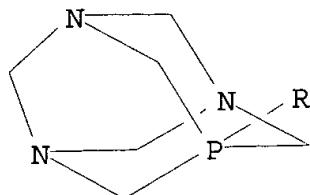
IT 141375-02-2

(mechanism of catalytic aq. hydrogenations with
chlorotris(1,3,5-triaza-7-phosphadamantane)rhodium(I))

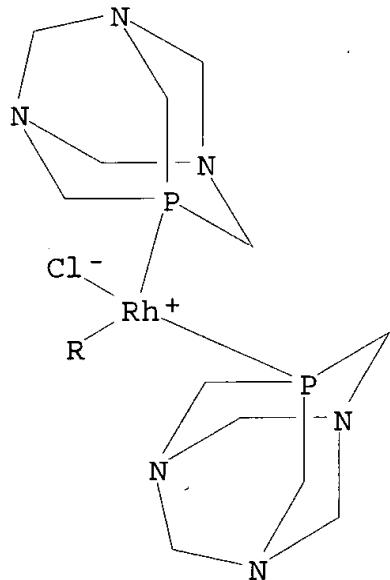
RN 141375-02-2 HCA

CN Rhodium, chlorotris(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-
.kappa.P7)-, (SP-4-2)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 22-3 (Physical Organic Chemistry)
 Section cross-reference(s): 29, 67

IT 178476-72-7

(mechanism of catalytic aq. hydrogenations with
 chlorotris(1,3,5-triaza-7-phosphadamantane) rhodium(I))

IT 141375-02-2

(mechanism of catalytic aq. hydrogenations with
 chlorotris(1,3,5-triaza-7-phosphadamantane) rhodium(I))

L62 ANSWER 6 OF 13 HCA COPYRIGHT 2002 ACS

122:92932 Manufacture of volume-phase hologram. Yamaguchi, Takeo; Toba, Yasumasa; Yasuike, Madoka (Toyo Ink Mfg Co, Japan). Jpn. Kokai Tokkyo Koho JP 06149142 A2 19940527 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-328636 19921113.

AB In the title manuf. of holog. recording medium having a photosensitive layer, comprised of (A) (meth)acrylate homopolymer or (meth)acrylate-vinyl copolymer with 2 components, (B) a compd. contg. 1 polymerizable ethylenic unsatd. bonds, (C) 3-keto-coumarin deriv., and (D) diaryl iodonium salt, interposed between a optically transparent support and a transparent protective layer, the manuf. comprises (1) exposing the above recording medium to a radiation interference pattern, (2) processing the medium with a solvent capable of swelling the medium, (3) processing the medium with a solvent incapable of swelling the medium for shrinking, and (4) exposing the medium to an actinic ray and/or heat either before or after (1). The manuf. provided the hologram with chem. stable and environment-resistant characteristics.

IT 160508-12-3

(manuf. of vol.-phase hologram with chem. stable and environment-resistant characteristics)

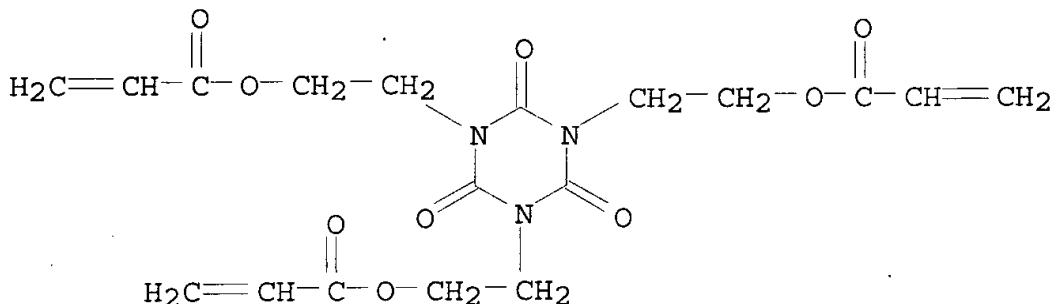
RN 160508-12-3 HCA

CN Ferrocene, [(2-methyl-1-oxo-2-propenyl)oxy]methyl-, polymer with (2,4,6-trioxo-1,3,5-triazine-1,3,5(2H,4H,6H)-triyl)tri-2,1-ethanediyl tri-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 40220-08-4

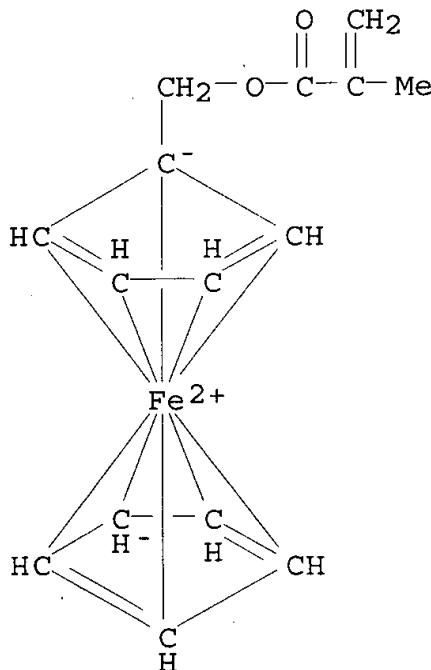
CMF C18 H21 N3 O9



CM 2

CRN 31566-61-7

CMF C15 H16 Fe O2



IC ICM G03H001-02
ICS G02B001-10
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)
IT 132612-48-7 160508-11-2 160508-12-3 160508-13-4
160508-14-5 160508-15-6
(manuf. of vol.-phase hologram with chem. stable and
environment-resistant characteristics)

L62 ANSWER 7 OF 13 HCA COPYRIGHT 2002 ACS

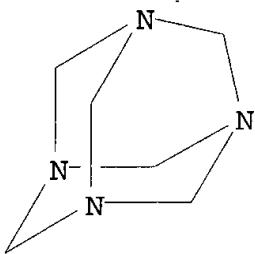
121:259195 Heavy element staining of sedimentary organic matter
functional groups for backscattered electron imaging.
Belin-Geindre, S.; Chenu, C. (Institut Francais du Petrole,
Rueil-Malmaison, 92506, Fr.). Revue de l'Institut Francais du
Petrole, 49(1), 5-20 (English) 1994. CODEN: RFPTBH. ISSN:
0020-2274.

AB Staining by heavy element appears as an accurate method to
distinguish in situ org. constituents within source rocks. The
chem. compn. of these constituents can be traced through SEM/BSE
(SEM/backscattered electron imaging). Although specificity of the
staining agents tested in this study appears to be rather broad,
response of functional groups to staining is quite acceptable.
Tests on polymers demonstrated the feasibility of the procedure
(intensity of response, immersion time, penetration depth, etc.).
Tests on org.-rich sediments showed the precision of the response.
It has been possible to make fine distinctions between several
areas: in coal, between sulfur-rich and sulfphur-depleted areas; in
kukersite between the external and the internal part of the cell
wall; and in algal mat between various algal laminites. Tests on
argillites, where org. matter is found as small-sized particles
dispersed within the argillaceous matrix, are very promising as it
was possible to obtain a selective staining of certain particles and
to allow distinction of several types of algal org. matter. One of
the advantages of staining is that it can be applied to the same
prepn. (i.e., polished surfaces) than those used by org. petrog. and
consequently to provide information at a similar observation scale.

IT 37604-90-3, Silver methenamine
(staining agent; for functional groups in sedimentary org. matter
for backscattered electron imaging)

RN 37604-90-3 HCA

CN 1,3,5,7-Tetraazatricyclo[3.3.1.13,7]decane, silver salt (9CI) (CA
INDEX NAME)



$$x \cdot Ag(x)$$

CC 51-1 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 73
IT 24968-12-5, **Poly(butylene terephthalate)**
(heavy element staining of sedimentary org. matter functional
groups for backscattered electron imaging)
IT 1343-93-7, Phosphotungstic acid 20427-56-9, Ruthenium tetroxide
20816-12-0, Osmium tetroxide 37604-90-3, Silver
methenamine
(staining agent; for functional groups in sedimentary org. matter
for backscattered electron imaging)

L62 ANSWER 8 OF 13 HCA COPYRIGHT 2002 ACS

120:194258 Heat-sensitive temperature-indicating inks. Jin, Chenghua (Peop. Rep. China). Faming Zuanli Shengqing Gongkai Shuomingshu CN 1069750 A 19930310, 11 pp. (Chinese). CODEN: CNXXEV.
APPLICATION: CN 1992-110435 19920908.

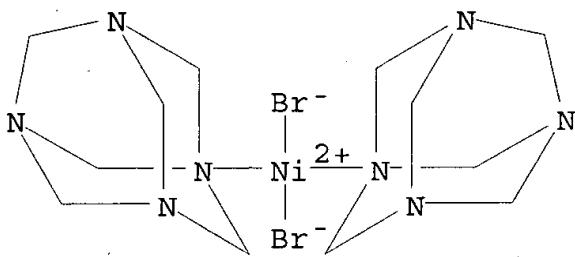
AB Title ink comprising heat-sensitive colorant.

AB Title inks comprise heat-sensitive color-reversible pigments, binders, org. solvents, and additives. Five different ink compns. based on different binders are claimed. A typical ink compn. comprised HgI₂ 1.5, AgI 10, xylene 20-30, iso-PrOH 13-20, a polyamide 33-50, PhMe 3-5, Ca gels, and resin diluents (1:1:1:1 EtOH/ EtOAc/xylene/iso-PrOH) 8-13%.

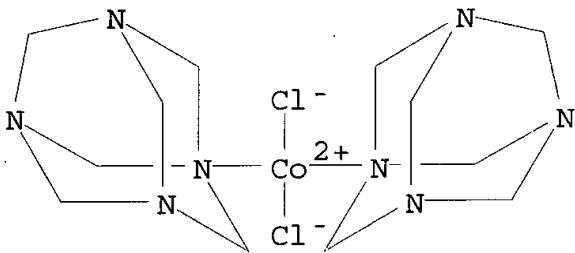
IT 29292-06-6 32096-65-4
(pigment, heat-sensitive, color-reversible, printing inks contg.,
for temp. indicators)

RN 29292-06-6 HCA

CN Nickel, dibromobis(1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane-N1)-
(9CI) (CA INDEX NAME)



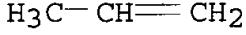
RN 32096-65-4 HCA
 CN Cobalt, dichlorobis(1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane-kappa.N1)-, (T-4)- (9CI) (CA INDEX NAME)



IT 9003-07-0D, Polypropylene, chlorinated
 (printing inks, contg. heat-sensitive color-reversible pigments,
 for temp indicators)
 RN 9003-07-0 HCA
 CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 115-07-1
 CMF C3 H6



IC ICM C09D011-00
 CC 42-12 (Coatings, Inks, and Related Products)
 IT 482-89-3, Indigo blue 11115-67-6, Ammonium vanadate 12026-66-3
29292-06-6 32096-65-4 37320-91-5, Mercury iodide
 (pigment, heat-sensitive, color-reversible, printing inks contg.,
 for temp. indicators)
 IT 85-44-9D, Phthalic anhydride, polymers with soybean oils and
 pentaerythritol 115-77-5D, Pentaerythritol, polymers with soybean
 oils and phthalic anhydride **9003-07-0D**,
Polypropylene, chlorinated 9003-22-9, Vinyl acetate-vinyl
 chloride copolymer 9004-36-8, CAB 50935-18-7, Dinitrocellulose
 (printing inks, contg. heat-sensitive color-reversible pigments,
 for temp indicators)

L62 ANSWER 9 OF 13 HCA COPYRIGHT 2002 ACS
117:39021 Water-soluble organometallic compounds. 2. Catalytic hydrogenation of aldehydes and **olefins** by new water-soluble 1,3,5-triaza-7-phosphaadamantane complexes of ruthenium and rhodium. Daresbourg, Donald J.; Joo, Ferenc; Kannisto, Michael; Katho, Agnes; Reibenspies, Joseph H. (Dep. Chem., Texas A and M Univ., College Station, TX, 77843, USA). Organometallics, 11(6), 1990-3 (English) 1992. CODEN: ORGND7. ISSN: 0276-7333.

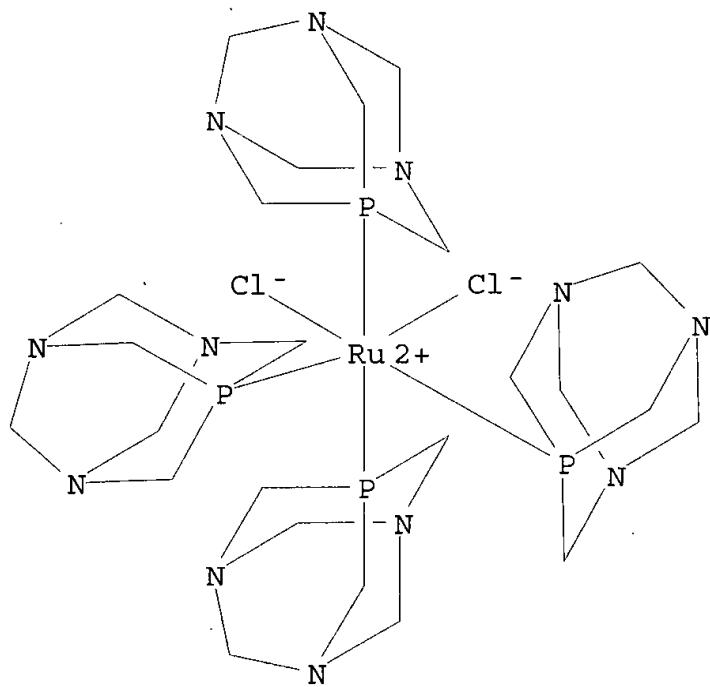
AB Water sol. phosphine complexes of Ru(II) and Rh(I) have been prepd. by the redn. of RuCl₃ and RhCl₃ in ethanol in the presence of the air stable phosphine, 1,3,5-triaza-7-phosphaadamantane(1). The complexes RuCl₂(PTA)₄ (2a) and its protonated analog, RuCl₂(PTA)₄.2HCl (2b), have been characterized by x-ray crystallog. 2A crystallizes in the monoclinic space group P21/n, Z = 4. 2B crystallizes in the orthorhombic space group Fdd2, Z = 8. Both complexes are octahedral with cis chloride ligands. 2B contains two trans phosphine ligands protonated at a N atom. Similarly the cis-bisphosphine complex, RhCl(PTA)2.2HCl, derived from the protonation of RhCl(PTA)₃ by HCl has been characterized by x-ray crystallog. RhCl(PTA)2.2HCl crystd. in the triclinic space group P, Z = 2. The geometry of this complex is that of a square planar anionic Rh(I) deriv. with two cis phosphine ligands and two cis chloride ligands. The water sol. ruthenium phosphine deriv. 2a is catalytically quite active for the conversion of unsatd. aldehydes to unsatd. alcs. using a biphasic aq./org. medium with formate as the source of hydrogen. By way of contrast under similar condition RhCl(PTA)₃ is a very active catalyst for **olefin** hydrogenation and is almost completely inactive for the hydrogenation of the aldehyde functionality.

IT 141374-99-4

(prepn. and crystal structure and selective hydrogenation of unsatd. aldehydes by formate or hydrogen in presence of)

RN 141374-99-4 HCA

CN Ruthenium, dichlorotetrakis(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-.kappa.P7)-, (OC-6-22)- (9CI) (CA INDEX NAME)

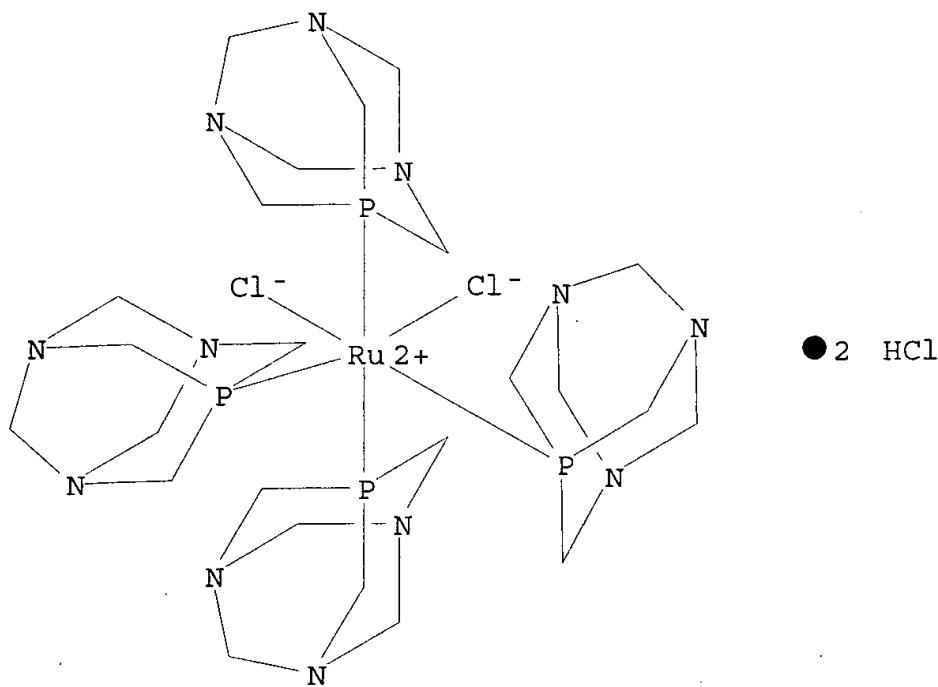


IT 141375-00-0P

(prepn. and crystal structure of)

RN 141375-00-0 HCA

CN Ruthenium, dichlorotetrakis(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-P7)-, dihydrochloride, (OC-6-22) - (9CI) (CA INDEX NAME)



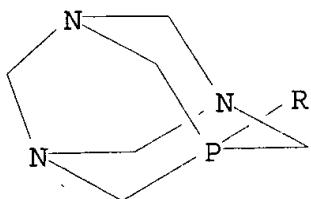
IT 141375-02-2

(prepn. and hydrogenation of **olefins** in presence of)

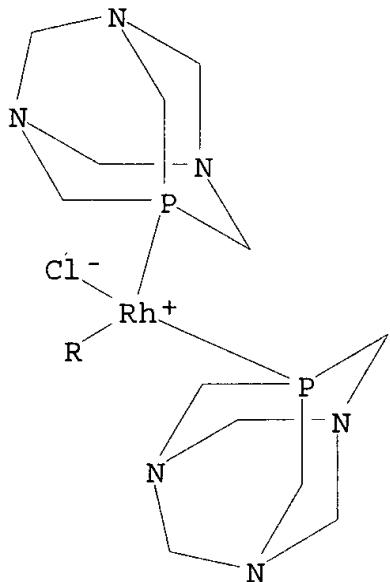
RN 141375-02-2 HCA

CN Rhodium, chlorotris(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-.kappa.P7)-, (SP-4-2)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

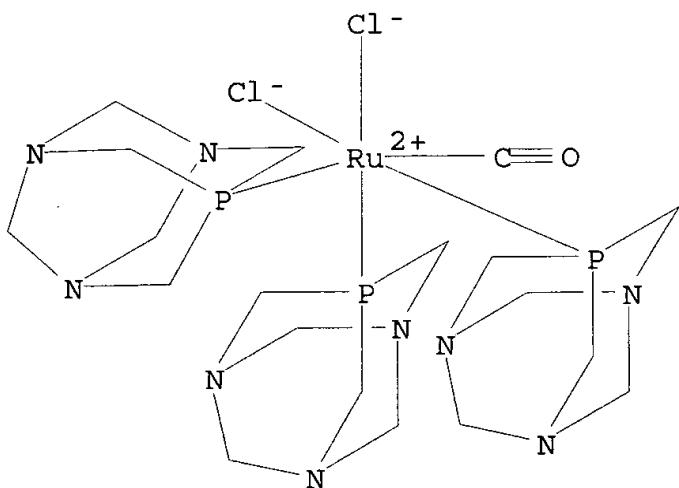


IT 141375-01-1P 141375-03-3P

(prepn. of)

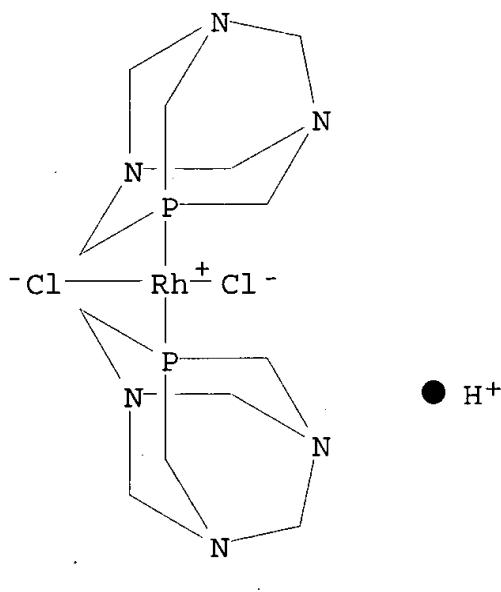
RN 141375-01-1 HCA

CN Ruthenium, carbonyldichlorotris(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-P7)- (9CI) (CA INDEX NAME)



RN 141375-03-3 HCA

CN Rhodate(1-), dichlorobis(1,3,5-triaza-7-phosphatricyclo[3.3.1.13,7]decane-P7)-, hydrogen, monohydrochloride, (SP-4-2)- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 22, 67

IT **141374-99-4**

(prepn. and crystal structure and selective hydrogenation of
 unsatd. aldehydes by formate or hydrogen in presence of)

IT **141375-00-0P**

(prepn. and crystal structure of)

IT **141375-02-2**

(prepn. and hydrogenation of **olefins** in presence of)

IT **141375-01-1P 141375-03-3P**

(prepn. of)

L62 ANSWER 10 OF 13 HCA COPYRIGHT 2002 ACS

105:163794 Studies on transition metal oxo and nitrido complexes. Part
 8. Reactions of osmium oxo-imido complexes with alkenes. Griffith,
 William P.; McManus, Neil T.; White, Andrew D. (Inorg. Chem. Res.
 Lab., Imp. Coll., London, SW7 2AY, UK). J. Chem. Soc., Dalton
 Trans. (5), 1035-9 (English) 1986. CODEN: JCDBI. ISSN: 0300-9246.

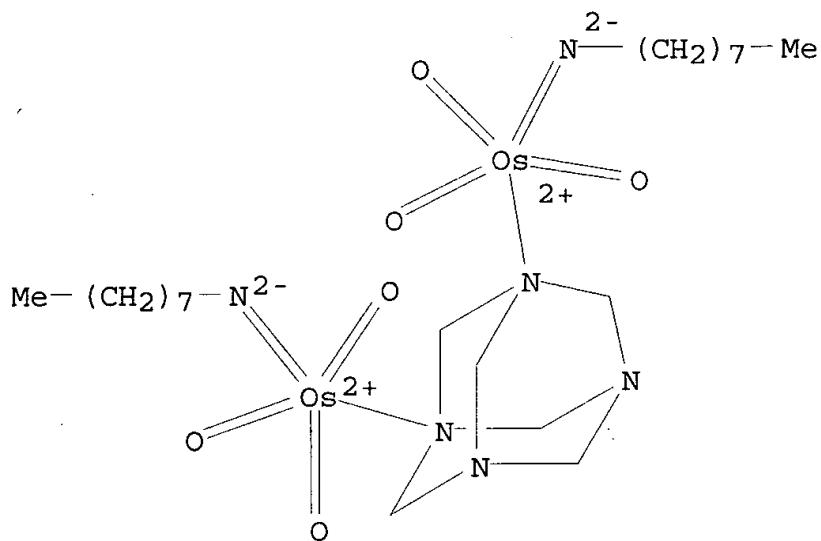
AB Reactions of OsO₃(NR) [R = CMe₃, CH₂CMe₃ (R₁), adamantan-1-yl,
 CMe₂CH₂CMe₃ (R₂)] and of OsO₂(NCMe₃)₂ with alkenes (R₃) give
 [OsO₂(OR₃NR)]₂ and OsO₂[NCMe₃R₃NCMe₃], resp., contg. chelating
 alkanolaminato and diaminato ligands. Adducts OsO₃(NR)L (R = CMe₃,
 R₁, R₂; L = quinuclidine) and [OsO₃(NR)]₂L₁ [R = CMe₃, R₂, L₁ =
 1,4-diazabicyclo[2.2.2]octane (L₂), 1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane; R = R₂, L₁ = L₂] also react with
 alkenes (MeO₂CCH:CHCO₂Me, cyclohexene) to give complexes contg.
 chelating alkanolaminato groups, e.g. [OsO₂[O(CHCO₂Me)₂NCMe₃]]₂L₂.

IT **103961-45-1P**

(prepn. and reactions of, with alkenes)

RN 103961-45-1 HCA

CN Osmium, bis[1-octanaminato(2-)]hexaoxo[.mu.- (1',3,5,7-tetraazatricyclo[3.3.1.13,7]decane-N1:N3)]di-, stereoisomer (9CI) (CA INDEX NAME)

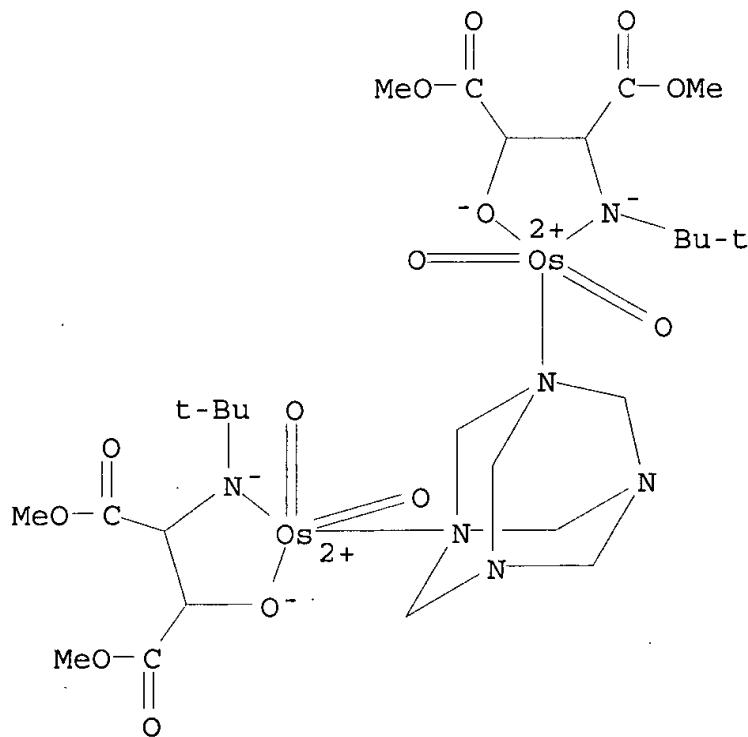


IT 103961-49-5P

(prepn. of)

RN 103961-49-5 HCA

CN Osmium, bis[dimethyl N-(1,1-dimethylethyl)-3-hydroxyaspartato(2-)-N2,O3]tetraoxo[.mu.- (1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane-N1:N3)]di- (9CI) (CA INDEX NAME)

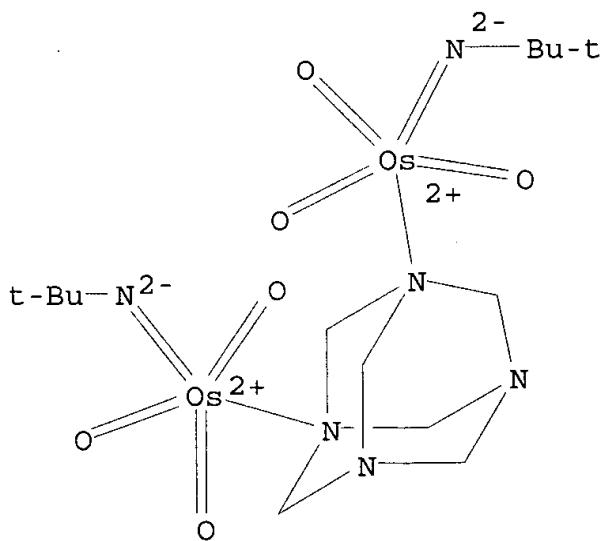


IT 73384-39-1

(reaction of, with di-Me fumarate)

RN 73384-39-1 HCA

CN Osmium, bis[2-methyl-2-propanaminato(2-)]hexaoxo[.mu.-(1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane-N1:N3)]di- (9CI) (CA INDEX NAME)

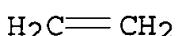


IT 74-85-1, reactions 115-07-1, reactions

(reaction of, with osmium oxo imido complex)

RN 74-85-1 HCA

CN Ethene (9CI) (CA INDEX NAME)



RN 115-07-1 HCA

CN 1-Propene (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)

IT 103961-44-0P 103961-45-1P 103961-46-2P

(prepn. and reactions of, with alkenes)

IT 99159-27-0P 103764-93-8P 103764-94-9P 103764-95-0P

103764-96-1P 103764-97-2P 103764-98-3P 103782-23-6P

103961-47-3P 103961-48-4P 103961-49-5P 103961-50-8P

104580-13-4P

(prepn. of)

IT 73384-38-0 73384-39-1 103961-51-9

(reaction of, with di-Me fumarate)

IT 74-85-1, reactions 80-62-6 96-33-3 115-07-1,

reactions 764-42-1

(reaction of, with osmium oxo imido complex)

L62 ANSWER 11 OF 13 HCA COPYRIGHT 2002 ACS

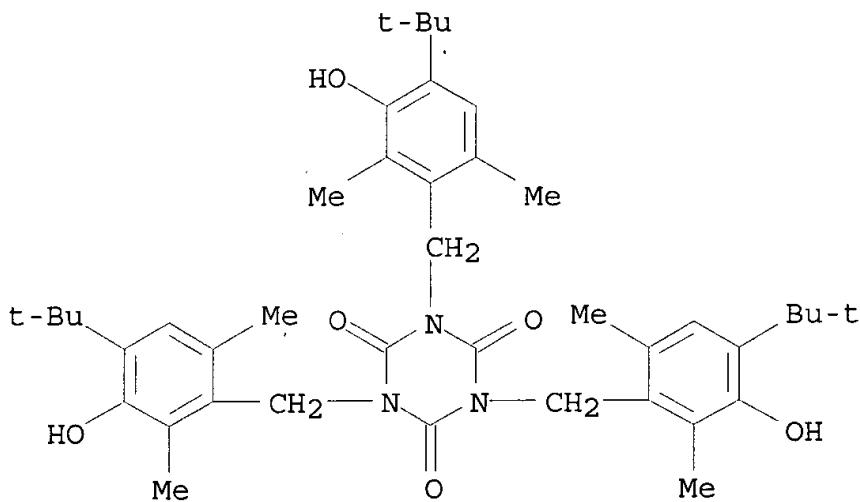
98:144525 Metallic salts of hindered phenolic anti-oxidant as anti-gel component in transition metal-catalyzed **olefin** **polymers** containing halide residue. Corwin, Michael Allen; Foster, George Norris (Union Carbide Corp., USA). Eur. Pat. Appl. EP 68851 A1 19830105, 41 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1982-303341 19820625. PRIORITY: US 1981-279624 19810701.AB Metal salts of hindered phenolic antioxidants are antigelling agents for **polyolefins** prep'd. with Ziegler-Natta catalysts during film extrusion. Thus, ethylene-1-butene copolymer [25087-34-7] contg. 200 ppm octadecyl 3-(3',5'-di-tert-butyl-4'-hydroxyphenyl)propionate Ca salt [85139-25-9], when extruded at 23 lbs/h at 410.degree.F, showed no gel streaking or pinstriping.

IT 85139-28-2

(antioxidants and antigel agents, for **polyolefin** extruded film)

RN 85139-28-2 HCA

CN 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tris[[4-(1,1-dimethylethyl)-3-hydroxy-2,6-dimethylphenyl]methyl]-, zinc salt (9CI) (CA INDEX NAME)



● x Zn

IT 9002-88-4

(film extrusion of, antigel agents for, hindered phenol metal salts as)

RN 9002-88-4 HCA

CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1

CMF C2 H4

H₂C=CH₂

IC C08K005-13; C08L023-02; C08F006-02

CC 37-6 (Plastics Manufacture and Processing)

ST polyethylene antioxidant extrusion gelation;
polyolefin antigelling phenolic antioxidant

IT Antioxidants

(hindered phenol metal salts, for polyolefins)

IT 2082-79-3 85139-24-8 85139-25-9 85139-26-0 85139-27-1
85139-28-2 85201-52-1

(antioxidants and antigel agents, for polyolefin extruded film)

IT 90-15-3 90-66-4 96-69-5 1709-70-2 1843-03-4 2658-23-3
30143-16-9 30143-17-0 85139-29-3

(antioxidants, for polyolefin extruded film)

IT 119-47-1 128-37-0, uses and miscellaneous 732-26-3 1131-60-8
1709-70-2 6683-19-8 25567-40-2 32509-66-3 40601-76-1

IT 9002-88-4 25087-34-7
 (antioxidants, for **polyolefins**)
 (film extrusion of, antigel agents for, hindered phenol metal salts as)

L62 ANSWER 12 OF 13 HCA COPYRIGHT 2002 ACS

93:45877 Improved procedure for the oxyamination of **olefins** with trioxo(tert-butylimido)osmium(VIII). Hentges, Steven G.; Sharpless, K. Barry (Dep. Chem., Stanford Univ., Stanford, CA, 94305, USA). J. Org. Chem., 45(11), 2257-9 (English) 1980. CODEN: JOCEAH. ISSN: 0022-3263.

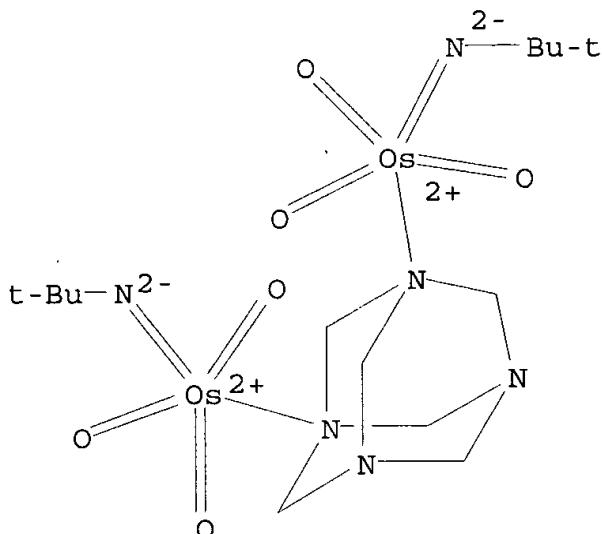
AB An improved procedure for the oxyamination of **olefins** with $\text{Me}_3\text{CNOsO}_3$ (I) was given. Improved ratios of amino alc. to diol were obtained by the use of quinuclidine in dimethoxyethane (in place of pyridine) as solvent. Five stable, cryst. complexes of I with tertiary alkyl bridgehead amines, such as quinuclidine, were isolated and characterized.

IT 73384-39-1P

(prepn. of)

RN 73384-39-1 HCA

CN Osmium, bis[2-methyl-2-propanaminato(2-)]hexaoxo[.mu.-(1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane-N1:N3)]di- (9CI) (CA INDEX NAME)



CC 23-7 (Aliphatic Compounds)

IT Hydroxylation
 (amination and, of **olefins** with (tert-butylimido)trioxoosmium)

IT Amination
 (hydroxylation and, of **olefins** with (tert-butylimido)trioxoosmium)

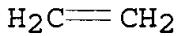
IT 50381-48-1
 (oxyamination of **olefins** with)
 IT 3266-25-9P 55915-74-7P 55915-77-0P 65760-61-4P 73384-36-8P

73384-37-9P 73384-38-0P **73384-39-1P** 73395-64-9P
(prepn. of)

L62 ANSWER 13 OF 13 HCA COPYRIGHT 2002 ACS
 90:153052 Smoke-retarded polymer compositions containing amine
 molybdates. Kroenke, William J. (Goodrich, B. F., Co., USA). U.S.
 US 4129540 19781212, 9 pp. Cont.-in-part of U.S. 4,053,455.
 (English). CODEN: USXXAM. APPLICATION: US 1977-841182 19771011.
 AB Amine molybdates, preferably melamine molybdate (I) [65100-35-8],
 function as smoke retardant additives in **polyolefins**,
 chlorosulfonated **polyolefins**, poly(vinyl acetate) (II)
 [9003-20-7], acrylonitrile homo- or copolymers, polysulfones, and
 synthetic rubbers when present at levels of 0.01-20 phr. Thus,
polyethylene (III) [9002-88-4] contg. 5 phr I had
 smoke redn. 25%. Smoke redn. in chlorosulfonated III, II,
 polyepichlorohydrin [24969-06-0], polyacrylonitrile [25014-41-9],
 and ABS [9003-56-9] contg. 10 phr I was 30, 54, 57, 35, and 92%,
 resp.
 IT 9002-88-4 9002-88-4D, chlorosulfonated
 9003-07-0
 (smoke retardants for, melamine molybdate as)
 RN 9002-88-4 HCA
 CN Ethene, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 74-85-1
 CMF C2 H4



RN 9002-88-4 HCA
 CN Ethene, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 74-85-1
 CMF C2 H4



RN 9003-07-0 HCA
 CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 115-07-1
 CMF C3 H6

H₃C—CH=CH₂

IT 65125-44-2 69773-31-5

(smoke retardants, for plastics)

RN 65125-44-2 HCA

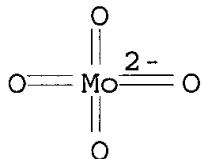
CN Molybdate (MoO₄²⁻), (T-4)-, dihydrogen, compd. with 1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane (1:2) (9CI) (CA INDEX NAME)

CM 1

CRN 7782-91-4

CMF H . 1/2 Mo O₄

CCI CCS

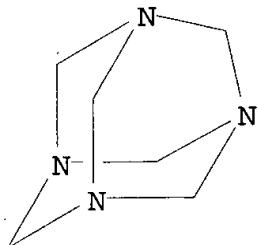


2 H⁺

CM 2

CRN 100-97-0

CMF C₆ H₁₂ N₄

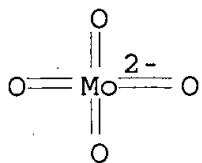


RN 69773-31-5 HCA

CN Molybdate (MoO₄²⁻), (T-4)-, dihydrogen, compd. with 1,3,5,7-tetraazatricyclo[3.3.1.13,7]decane (2:1) (9CI) (CA INDEX NAME)

CM 1

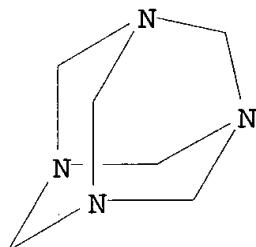
CRN 7782-91-4
 CMF H . 1/2 Mo O4
 CCI CCS



2 H⁺

CM 2

CRN 100-97-0
 CMF C6 H12 N4



IC C08K005-34
 NCL 260028500A
 CC 36-6 (Plastics Manufacture and Processing)
 IT Rubber, synthetic
 (chlorosulfonated polyethylene, smoke retardants for,
 melamine molybdate as)
 IT 9002-88-4 9002-88-4D, chlorosulfonated
 9003-07-0 9003-20-7 9003-54-7 9003-56-9 24938-67-8
 24969-06-0 25014-41-9 25135-51-7
 (smoke retardants for, melamine molybdate as)
 IT 52452-61-6 65100-35-8 65100-36-9 65100-38-1 65100-39-2
 65100-40-5 65125-39-5 65125-40-8 65125-41-9 65125-42-0
 65125-43-1 65125-44-2 65125-46-4 65164-66-1
 65235-33-8 69773-29-1 69773-31-5
 (smoke retardants, for plastics)